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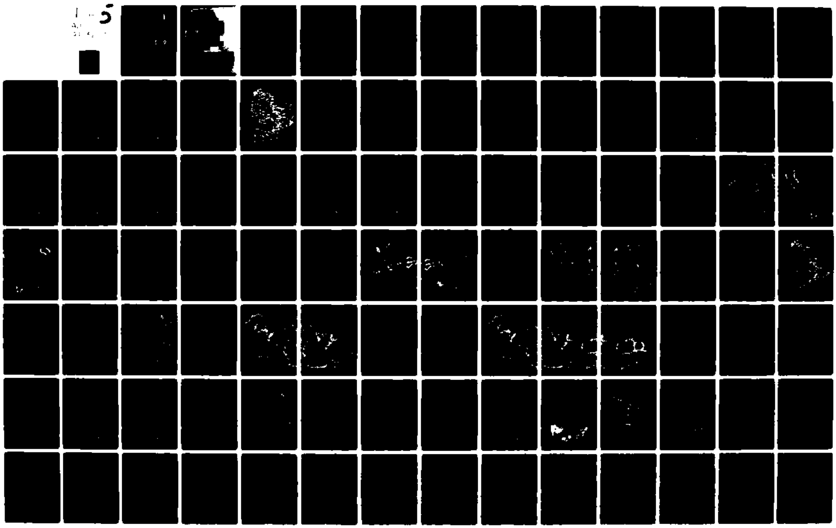

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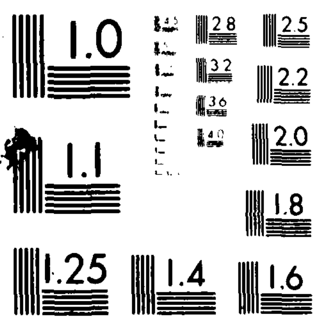

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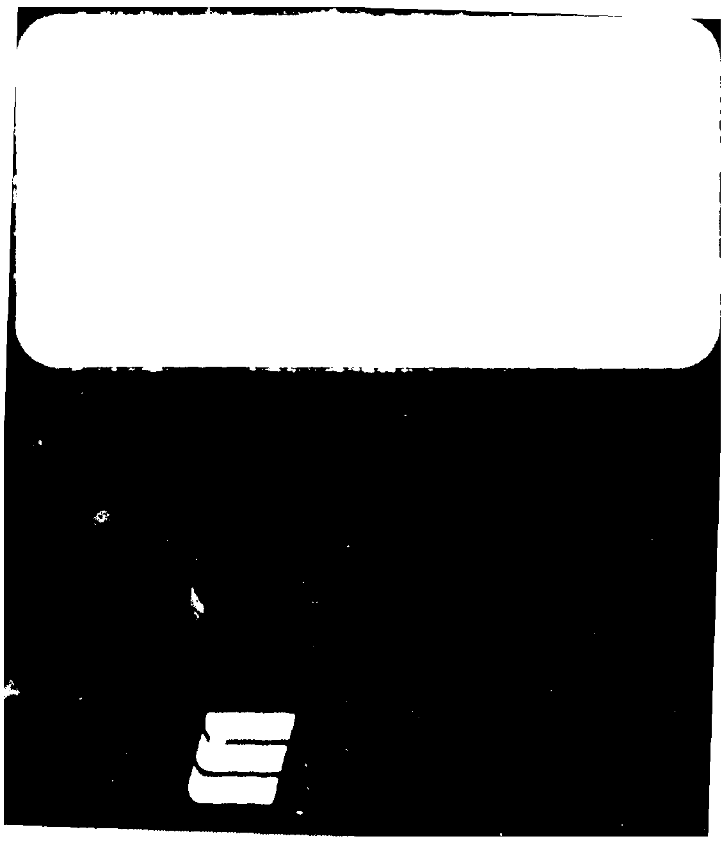

MX SYSTEM SITING SUMMARY REPORT

DTN/ASC SITING
VOLUME II - PART I

Prepared for:

U.S. Department of the Air Force
Ballistic Missile Office
Norton Air Force Base, California 92409

Prepared by:

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Results of the MX System siting study in Nevada and Utah gave the optimal routing of DTN and the preferred siting of an ASC for each MOB option. The OBS/DTA siting evaluations resulted in operationally, technically, environmentally, and geographically acceptable [illegible]

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FOREWORD

This report has been prepared for the U.S. Department of the Air Force, Ballistic Missile Office, in compliance with Contract No. F04704-80-C-0006. It presents the summary of Ertec Western's investigations for siting of facilities and routing of a transportation network for the MX system in Nevada, Utah, and New Mexico. Information, results, and conclusions contained in this report are based on MX siting studies conducted during fiscal years 1980 and 1981. The major part of the study covers 37 deployment valleys and three main operating base sites in Nevada and Utah. Limited studies were also performed in the area surrounding the main operating base site in New Mexico. This report consists of three volumes.

Volume I, Part I

o General Introduction providing brief overviews of the MX system, program schedule, and siting program which includes:

- Introduction
- Summary of MX System Components
- MX Program Schedule Overview
- Siting Program Overview

Volume I, Part II

o Summary discussions of results, conclusions, and recommendations of the Shelter Siting Summary studies of the 37 deployment valleys which includes:

- Introduction
- Siting Requirements
- Siting Methodology
- MPS/HSS Siting Program, Nevada/Utah DDA
- Shelter Siting Program Summary, Conclusions, and Recommendations

Volume II, Part I

o Results and conclusions of the Designated Transportation Network/Area Support Centers (DTN/ASC) siting studies within the MX system study areas which includes:

- Introduction
- Objective and Scope
- Methodology
- Criteria
- Field Reconnaissance and Pass Evaluation
- Evaluation of Optimum DTN Routings and ASC Locations
- Conclusions

Volume II, Part II

- o Results and conclusions of the Operational Base Test Site/ Designated Training Area (OBTS/DTA) siting studies near the main operating base sites in Nevada-Utah and New Mexico which includes:
  - Introduction
  - Siting Requirements
  - Methodology
  - OBTS/DTA Siting Evaluation
  - Conclusions

Volume III

- o Land Acquisition Application Package Map Sheets depicting the various preferred and alternate facility combinations for land parcel acquisition which includes:
  - Introduction

This report was being prepared prior to the President's decision on 2 October 1981 not to proceed with the MPS MX basing option. It was intended that more detailed valley siting reports would follow this general evaluation. The original objective of the report was to provide interim data to the users of MX siting data until these more detailed evaluations could be produced. As a result of the President's decision, this report represents the final summary of the MX system siting in the MPS basing mode.

It should be noted that at the beginning of FY 81, siting studies were performed under the firm name of Fugro National, Inc. at its Long Beach offices. On 25 March 1981, the corporate name was changed to The Earth Technology Corporation - Ertec. Since that date, the siting studies have been performed at the same offices under the name of Ertec Western, Inc. with support from Ertec Northwest, Inc., Seattle, Washington; Ertec Airborne Systems, Inc., Cypress, California; and Ertec Rocky Mountain, Inc., Denver, Colorado.

LIST OF ACRONYMS

ADT	Average Daily Traffic
AFRCE-MX	Air Force Regional Civil Engineer-MX
AFSC	Air Force System Command
ALCC	Airborne Launch Control Center
AOB	Auxiliary Operating Base
ASC	Area Support Center
BLM	Bureau of Land Management
BMO	Ballistic Missile Office
C^3	Command, Control, and Communication
CBR	California Bearing Ratio
CDP	Candidate Deployment Parcel
CEQ	Council on Environmental Quality
CMF	Cluster Maintenance Facility
COE	U. S. Department of the Army, Corps of Engineers
CONUS	Conterminous United States
CPT	Cone Penetrometer Test
CRN	Cluster Road Network
CSR	Candidate Siting Region
DAA	Designated Assembly Area
DDA	Designated Deployment Area
DEIS	Draft Environmental Impact Statement
DMA	Defense Mapping Agency
DOPAA	Description of Proposed Actions and Alternatives
DTA	Designated Training Area
DTN	Designated Transportation Network
EIS	Environmental Impact Statement
FLPMA	Federal Land Policy Management Act
FNI	Fugro National, Inc.
FSED	Full Scale Engineering Development
FY	Fiscal Year
GBNP	Great Basin National Park
HDR	Henningson, Durham, & Richardson, Inc.
HSS	Horizontal Shelter Site
IOC	Initial Operational Capability
KGRA	Known Geothermal Resources Area
MF	Medium Frequency
MMC	Martin Marietta Company
MOA	Military Overflight Area
MOB	Main Operating Base
MPS	Multiple Protective Structure
MPT	Mobile Patrol Teams
NCA	National Control Authorities
NEPA	National Environmental Policy Act
NH&S	Nuclear Hardness and Survivability
OB	Operational Base
OBTS	Operational Base Test Site

OSR	Operational Support Road
PLU	Preservation of Location Uncertainty
PMOA	Programmetric Memorandum of Agreement
POL	Petroleum, Oils, and Lubricants
PS	Protective Structure
QA	Quality Assurance
QD	Quantity Distance
R&D	Research and Development
REPR	Real Estate Planning Report
RES	Renewable Energy Sources
RMP	Ralph M. Parsons Company
ROW	Right-of-way
RSS	Remote Surveillance Site
SAC	Strategic Air Command
SALT	Strategic Arms Limitation Talks
SHPO	State Historic Preservation Officer
STV	Special Transport Vehicle
T&E	Threatened and Endangered
TEL	Transporter and Erector Launcher
TI	Technical Interchange
TSB	Test Support Building
USGS	United States Geological Survey
USPLS	United States Public Land Survey
UTM	Universal Transverse Mercator
V&H	Vulnerability and Hardness

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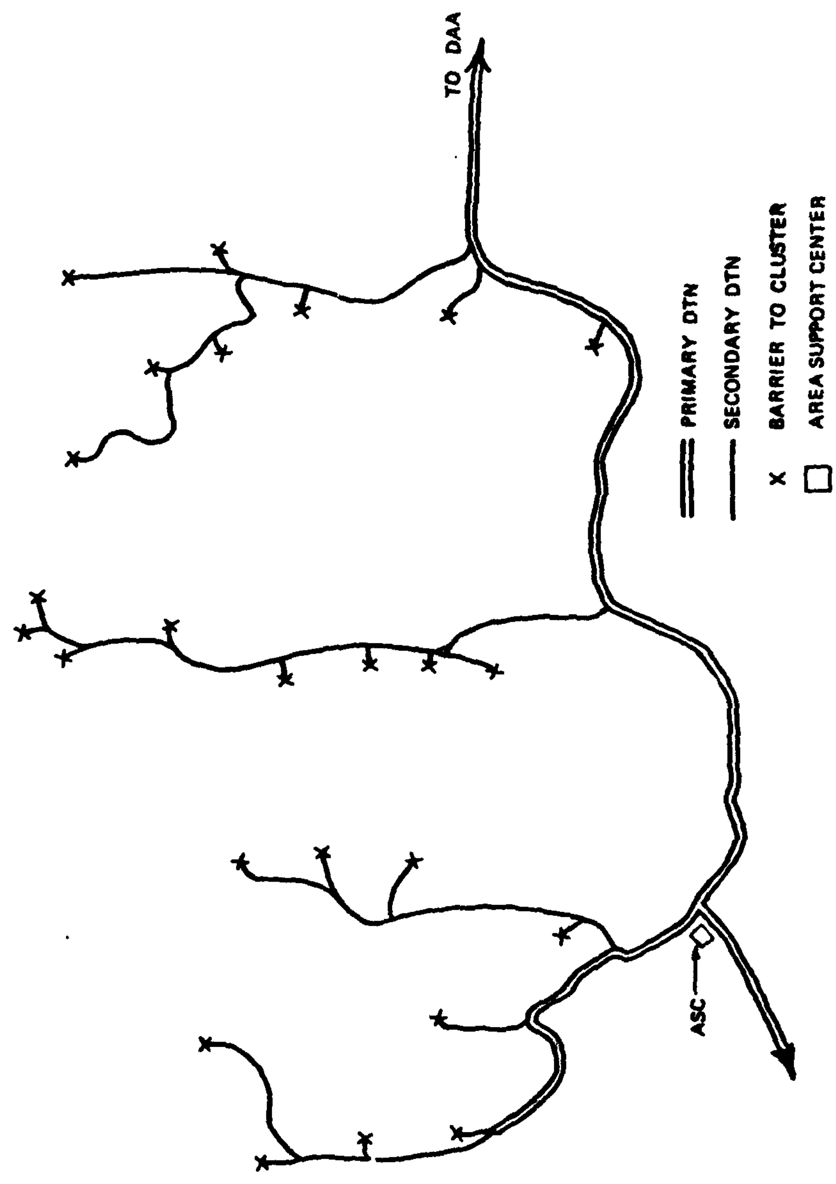
1.0 INTRODUCTION

The purpose of this report is to present the results and documentation of the studies performed by the Designated Transportation Network (DTN) working group on the routing of the DTN and preliminary siting of the Area Support Centers (ASC) in the Nevada-Utah study area.

The DTN is a road system for transporting MX missiles (Figure 1-1) between the Main Operating Base (MOB) and the 37 individual valleys which make up the Designated Deployment Area (DDA) (U. S. Department of the Air Force, BMO/AFSC, 1980).

The ASC is a 55-acre (136-hectares), fenced installation adjacent to the DTN which will provide facilities to support maintenance and security personnel and equipment (Figure 1-2) (U.S. Department of the Air Force, BMO/AFRCE-MX, 1980b). Each ASC will provide living and working accommodations for 200 to 300 people. The facilities include housing, warehouse, maintenance shops, helipads, and vehicle parking. Four ASCs would be required for a 200 cluster DDA.

The report consists of five sections. This section includes a brief description of the study area and a review of previous studies. Sections 2.0 through 5.0 summarize the scope of the study, the methodology, and criteria used as well as give a detailed description of the field reconnaissance effort and pass evaluation. Evaluations of alternative DTN and ASC locations to select the optimum DTN routing and ASC sites are



REFERENCE:
UNITED STATES DEPARTMENT OF THE AIR FORCE,
BMO/AFSC, 1980

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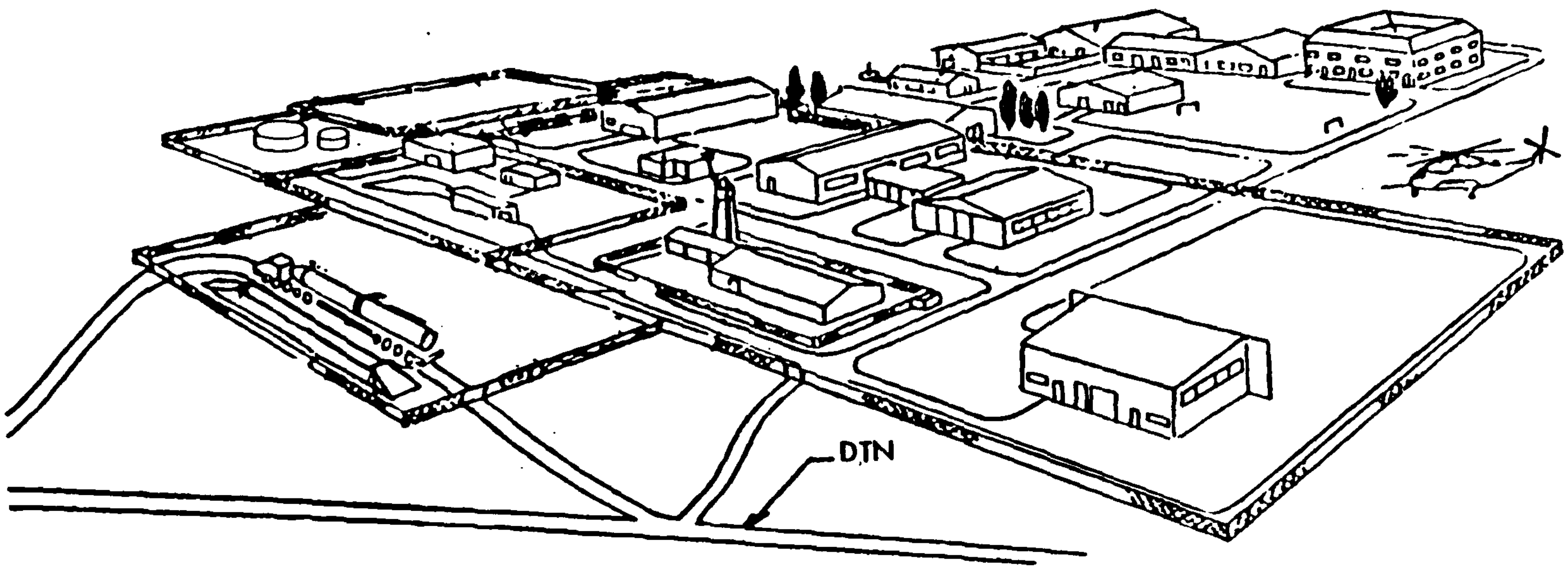
BMO/AFRCE-MX

CONCEPTUAL DTN ROADS AND ASC LAYOUT

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS

30 NOV 81 FIGURE 1-1



AREA SUPPORT CENTER PROVIDES

- SYSTEM SECURITY
- SYSTEM MAINTENANCE
- PERSONNEL SUPPORT
- MATERIAL SUPPORT
  - SPARES
  - REPAIRABLES
  - CONSUMABLES
- HELICOPTER SUPPORT
- VEHICLE SUPPORT
- EQUIPMENT SUPPORT
- COMMUNICATIONS

REFERRENCE:

UNITED STATES DEPARTMENT OF THE AIR FORCE, BMO/AFRCE–MX, 1980b

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CONCEPTUAL AREA SUPPORT CENTER

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS

30 NOV 81

FIGURE 1-2

presented in Section 6.0. Section 7.0 contains a description of the preferred routes and sites.

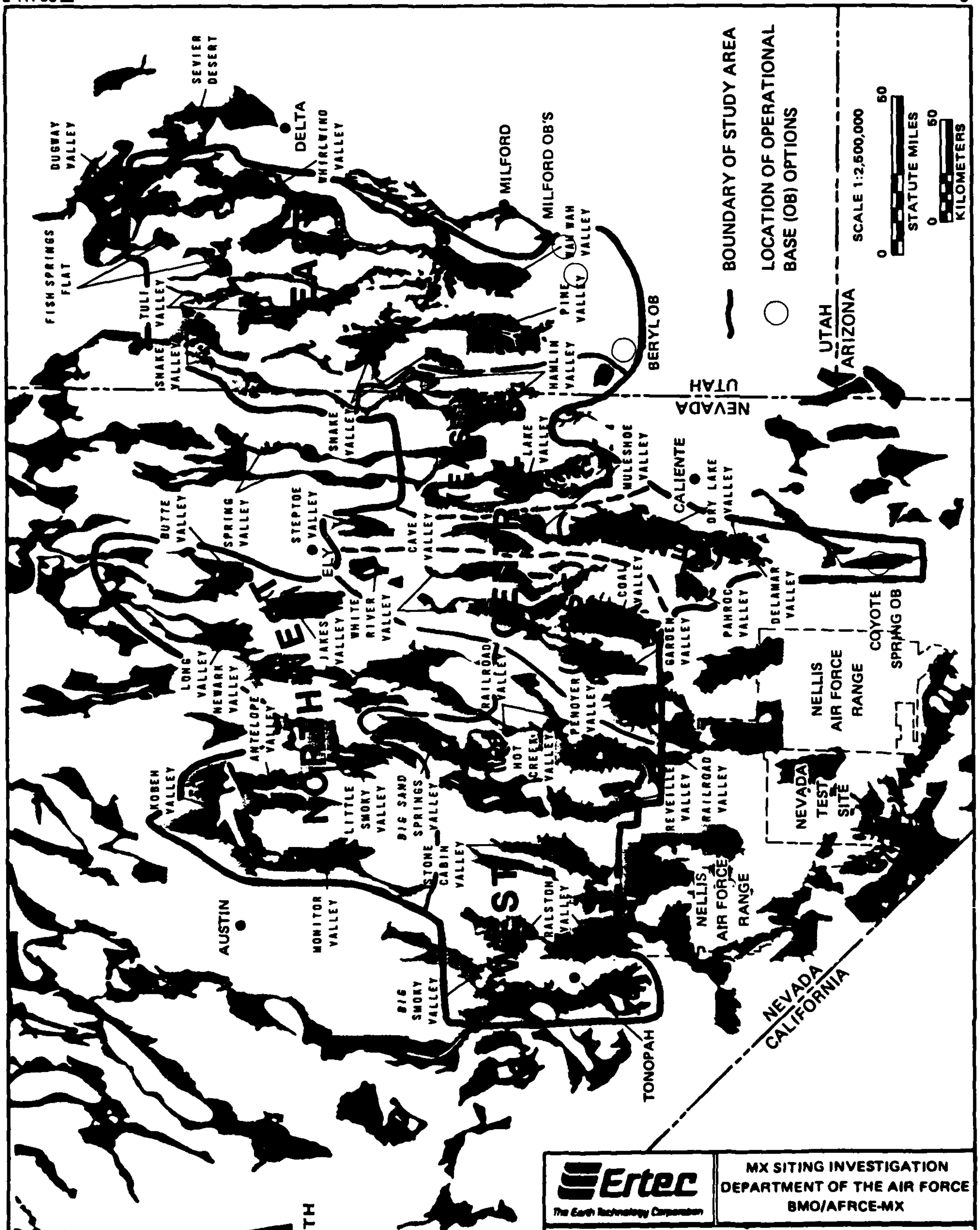
1.1 STUDY AREA

The DTN study area (Figure 1-3) is located within the Great Basin section of the Basin and Range physiographic sub-province and is comprised of central Nevada and west-central Utah. The physiography is controlled by north-south trending, elongated mountain ranges separated by alluviated valleys.

The mountain ranges in the study area average between 50 and 100 miles (80 and 161 km) in length and between 5 and 15 miles (8 and 24 km) in width. Intervening valleys are roughly the same dimensions. Mountain pass elevations generally range between 4600 and 7500 feet (1402 and 2286 m) above sea level. The highest peak in the area is Wheeler Peak at an elevation of 13,070 feet (3984 m). Valley floor elevations range from 4500 to 6000 feet (1371 to 1829 m) in the DDA.

The geology of the area is dominated by sedimentary and igneous rocks ranging in age from Precambrian to Quaternary and by unconsolidated sediments of Quaternary age. Mountain ranges are eroded remnants of uplifted fault blocks separated by down-dropped basins. Almost all the valleys are closed basins with gently sloping alluvial surfaces grading toward a central playa.

Due to the aridity of the region, playas, dunes, and alluvial fans are common features in the valleys. The low rainfall



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DTN/ASC STUDY AREA

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

30 NOV 81 FIGURE 1-3

also accounts for the dearth of perennial streams, rivers, and lakes. Vegetation is at a minimum. Sage and low brush are common on valley floors while at higher elevations, where water is more plentiful, cottonwoods, juniper, and piñon pines occur.

The population in the area is sparse. Ely, Nevada, is the largest community in the vicinity with a population of about 5626 (White Pine Chamber of Commerce, 1980). Many smaller communities also exist around the study area in Utah and Nevada, thus making the area easily accessible via a number of interstate, federal, and state highways and a network of county dirt roads, both improved and unimproved.

1.2 BACKGROUND

A limited DTN routing program was initiated in September 1979. This study evaluated mountain passes and developed a conceptual routing for a railroad system throughout the DDA. The study included the following.

- A study of existing maps and aerial photos;
- A fly-over field reconnaissance to rank passes by determining the difficulty of crossing; and
- Evaluation of the field and office data.

The results and conclusions of this study were presented in the Railroad Pass Evaluation Report dated 16 November 1979 (Fugro National, Inc., 1979a).

In February 1980, a preliminary study was initiated to route a road DTN system which would permit moving the missile throughout the DDA on a rubber-tired transporter. This study was preliminary and utilized existing highway data and the pass evaluation data in the Railroad Pass Evaluation Report. Conceptual DTN routes were developed for the various MOB options at Coyote Spring Valley, Nevada, and Beryl, Utah. Coexistence with state and federal highways was evaluated in three ways: maximum use, minimum use, and nonuse. A report presenting these results was completed in June 1980 (Fugro National Inc, 1980a).

Subsequently, a series of regional maps depicting cluster layouts connected by the DTN were produced on 22 May, 27 June, 1 July, 17 July, 2 September, and 26 September 1980. The environmental contractor also produced a series of regional cluster layout maps with the DTN. The DTN presented in the Draft Environmental Impact Statement (DEIS) (U.S. Department of the Air Force, 1980) as well as the 26 September 1980 Ertec-generated DTN (Drawing 1-1) formed the baseline for the present DTN study.

Late in FY 79, an initial ASC siting study was performed to determine preliminary site locations. As part of this study, an evaluation of the four-ASC system versus a five-ASC system (one ASC at each OB option) was made. The ASC-system options with the individual site locations were depicted on 2 September 1980 regional layout maps and presented at the System Design Review meeting at Norton Air Force Base on 17 September 1980.

adjustments were made to the site locations, and on 20 October 1980, a resited four-ASC system was provided to the AFRCE-MX and to HDR. This submittal supported a SAC-sponsored field reconnaissance of the ASC sites. The four recommended ASC sites were Pioche (Muleshoe), Eureka (Newark), and Tonopah (Stone Cabin), Nevada, and Delta (Whirlwind), Utah.

During early FY 81, Boeing Aerospace Co. analyzed the sensitivity of certain proposed ASC sites. The analysis was in terms of air and road mileage considerations for a three-, four-, or five-ASC system. The four-ASC system was the least costly of the systems that satisfactorily met the air and road requirements. A BMO letter, dated 17 November 1980, documented the decision to go with a four-ASC system (U.S. Department of the Air Force BMO, 1980a).

2.0 OBJECTIVES AND SCOPE

2.1 OBJECTIVE

The primary objective of the DTN/ASC siting study was to determine the most favorable routing to the DTN and the most suitable locations for the ASCs based on office studies and field reconnaissance. The results of these limited studies provide a basis for more detailed design studies which would have been initiated if the MX-MPS system had not been terminated.

2.2 SCOPE

To meet the primary objective requires the completion of a number of tasks and subtasks which are outlined as follows.

Office Studies and Meetings

- o Develop, review, and consolidate DTN and ASC criteria and requirements;
- o Review and compare alternate DTN routings and ASC locations;
- o Evaluate passes;
- o Collect existing data (highways, land use, environmental, etc.);
- o Evaluate impacts (environmental, land use, etc.);
- o Perform cost comparisons and trade-off studies;
- o Coordinate with other MX groups (OB working group, shelter layout, etc.);
- o Participate in technical interchange meetings among DTN working group members;
- o Layout regional DTN and detailed DTN through the IOC valleys;
- o Determine ASC locations;
- o Locate service roads;
- o Verify and locate potential alternates; and
- o Evaluate passes and routes.

3.0 METHODOLOGY

The current DTN study began with the formation of the DTN working group by the AFRCE-MX on 2 October 1980. Prior to formation of this group, the DTN had been depicted on various conceptual system layout graphics by several contractors, but no organized and comprehensive alignment selection process existed. To establish this process, key contractors and AFRCE-MX personnel were brought together into a working group.

The group members included the following organizations:

1. Air Force Regional Civil Engineer-MX (AFRCE-MX);
2. Strategic Air Command (SAC);
3. TRW (TRW);
4. Ertec Western, Inc. (Ertec);
5. Martin Marietta Corporation (MMC);
6. The Ralph M. Parsons, Co., (RMP);
7. Henningson, Durham, & Richardson (HDR); and
8. U.S. Department of the Army, Corps of Engineers (COE).

Ertec Western, Inc., as the siting contractor, performed the task of group coordinator as well as DTN alignment integrator.

3.1 DTN ROUTING

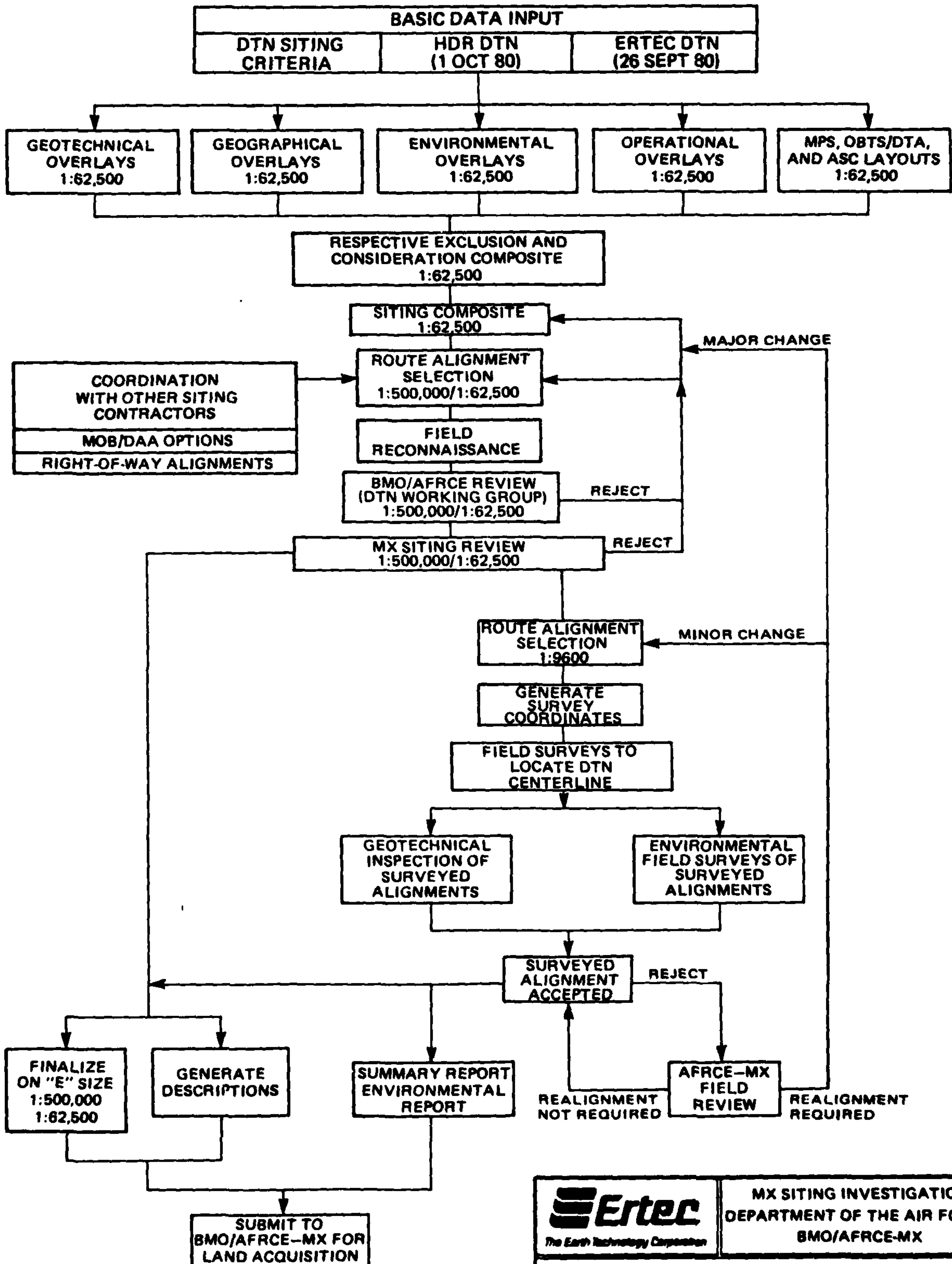
Initially, the group reviewed the preliminary criteria for DTN routing and compared the DTN developed by the Ertec shelter layout team with that appearing in the DEIS. This comparison revealed portions of the DTN that were common to both alignments and other segments where entirely different routes were used to get from one part of the DDA to another. The DTN

working group decided to focus initial efforts on those portions of the DTN which were depicted differently on the two presentations. The alternative alignments and others suggested by the ongoing shelter layout effort and by the earlier railroad pass study were evaluated through extensive field reconnaissance by the working group. On these trips, potential passes were formally evaluated and the completed evaluation sheets were collected for compilation of data. In some cases, the preferred alternate was decided upon during the course of the field trip. In others, analysis of the field data and additional data gathered in the office suggested a preferable route and the evaluation of these alternates was presented to the DTN working group with recommendations for a preferred alignment. In still other cases more detailed trade-off studies were required to identify the perferred alignment for a particular segment of DTN. The preferred alternates were then shown on a regional map of the DDA and distributed to the DTN working group members.

Preferred alignments were also shown on valley maps at 1:62,500 scale which were submitted to the Air Force and used in the state review process. Comments from state officials and other agencies were considered in the adjustment of the DTN. The process of selecting the preferred DTN is illustrated in the methodology flowchart shown in Figure 3-1.

3.2 ASC SITING

ASC siting studies paralleled those for DTN routing and were performed by the DTN working group. These studies began with



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DTN METHODOLOGY FLOW CHART

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

30 NOV 81 FIGURE 3-1

an update of the criteria and a review of the four locations recommended by SAC in November 1980. These locations, described in a BMO memorandum dated 17 November 1980 (U.S. Department of the Air Force, BMO, 1980a), were considered as baseline for the detailed study that ensued. As refinement of the DTN alignment progressed, location of the ASCs was adjusted to conform to the subsequent siting criteria.

Proposed ASC locations were shown as 1 mi^2 vicinity zones on 1:62,500 scale valley maps and field-checked on DTN reconnaissance trips.

4.0 CRITERIA

The consolidated criteria for the DTN routing and ASC siting are presented in Tables 4-1, 4-2, and 4-3.

In June 1980, the guideline for the DTN to coexist with highways was that "the DTN roads shall not coexist with interstate highways, state highways, or country roads unless terrain dictates the need to coexist (e.g., at mountain passes)" (U.S. Department of the Air Force, BMO/AFRCE-MX, 1980a). However, final policy on coexistence had not been determined at the time this report was prepared.

DESIGNATED TRANSPORTATION NETWORK (DTN)

I. EXCLUSIONS:

- Road grade greater than seven percent

II. CONSIDERATIONS:

- Should not cross railroad
- Cost effectiveness (construction cost vs. operating cost)
- Minimum grade
- Shortest road length
- Minimum elevation

AREA SUPPORT CENTER (ASC)

- Each ASC is to provide security coverage for a circular area with a radius of 65 statute miles
- Locate ASC s along the Designated Transportation Network (DTN) to efficiently provide overnight stopover accommodations for the Special Transportation Vehicle (STV)
- Locate ASC s in "suitable" terrain but without loss of shelter sites
- Arrange ASC s so that the combined service areas cover all shelter locations
- Consider proximity to major highways and local communities as being desirable

Note:
All operational siting requirements (E-TR-58-I) are applicable unless modified above

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DTN AND ASC
OPERATIONAL REQUIREMENTS

DESIGNATED TRANSPORTATION NETWORK AND
AREA SUPPORT CENTERS NEVADA/UTAH

30 NOV 81 TABLE 4-1

GEOTECHNICAL

I. EXCLUSIONS:

- Outcropping or shallow rock[1]
- Surface slope greater than 10 percent
- Adverse terrain (two or more drainages 10 feet deep within 1000 feet)[1]
- Standing water, swamps, or perennial streams
- Active playas[1]

II. CONSIDERATIONS:

- Fault-rupture hazard
- Potential sheet wash
- Surface slope greater than five percent
- Dunes
- Desiccation cracks
- Tufa
- Boulder fields

ENVIRONMENTAL

I. EXCLUSIONS:

- Designated wilderness areas
- Wilderness study areas
- Existing/proposed federal and state
  - Wildlife refuges, archaeological areas
- Existing/proposed national
  - Wildlife refuges, preserves, registered archaeological properties
- Federal threatened and endangered species
- Non-attainment air quality areas

II. CONSIDERATIONS:

- Federal and state proposed threatened and endangered species
- Locally identified "sensitive" areas
  - Environmental
  - Socio-Economical
- Visual Resources

NOTE:
1. Except DTN

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DTN AND ASC GEOTECHNICAL/ENVIRONMENTAL REQUIREMENTS

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

30 NOV 81 TABLE 4-2

GEOGRAPHICAL

I EXCLUSIONS:

- Existing/proposed federal and state:
  - Parks, landmarks, refuges, monuments, forests,[1] recreational areas
- Existing/Proposed National:
  - Grasslands, Indian reservations, ranges, military ranges (training areas, proving grounds, test site), registered historic properties
- Radii from population centers:

  20 statute miles from cities of 25,000 or more
  3.5 statute miles from cities of 5000 to 25,000
  1 statute mile from cities of less than 5000
- Inhabited buildings
- Industrial complexes:
  - Active mining areas, tank farms, pipeline complexes
- "High" potential mineral areas: *
  - Oil and gas fields, active and potentially active mining areas, strippable coal, oil shale, uranium deposits, known geothermal resource areas
- COE recommended exclusions

II CONSIDERATIONS:

- Private property
- State property
- "Good" potential mineral areas: *
  - Oil and gas, active and potentially active mining areas, strippable coal, oil shale, uranium deposits, known geothermal resource areas
- Irrigated farm land
- Prime agricultural land
- Moapa Indian Expansion Area
- Duckwater Indian Expansion Area
- Ranch and grazing allotments
- Existing access roads
- Proposed utility corridors

* Mineral potential to be determined by a study as required by FLPMA

Note:

1. Except DTN

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DTN AND ASC
GEOGRAPHICAL REQUIREMENTS
DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

30 NOV 81 TABLE 4-3

5.0 FIELD RECONNAISSANCE AND PASS EVALUATION

The purpose of the field reconnaissance was to verify the preferred DTN routes and ASC locations and to identify potential alternates. The evaluation of passes between valleys was the key element in the reconnaissance.

5.1 FIELD RECONNAISSANCE

Seven field trips were made between 24 November 1980 and 19 June 1981. The valleys and passes traversed in each trip, as well as its specific purpose, are tabulated in Appendix B. The combined routes of all trips are depicted in Drawing 5-1. The first trip covered the DTN from the Beryl and Milford OB options to the Initial Operational Capability (IOC) valleys. The following two trips traversed the majority of the DDA passes and DTN routes. Subsequent to this regional scale reconnaissance, three trips were arranged to check some local DTN routes. The last DTN field reconnaissance was to verify modifications to DTN routings resulting from the completion of revised regional map and the valley layouts at 1:62,500 scale which were presented on 15 May 1981 to AFRCE-MX. Evaluation of the ASC sites was also performed on these trips whenever the itinerary passed near a potential ASC location.

The reconnaissance was planned and arranged by Ertec with concurrence of the DTN working group. The results of the reconnaissance trips were discussed in subsequent meetings to determine any necessary adjustment in DTN routing or ASC locations.

5.2 PASS EVALUATION

Observations for the passes relevant to geotechnical, engineering, geographical, and environmental considerations were recorded on a DTN Pass Evaluation Sheet (Figure 5-1) by all participants on the trip. Tentative ranking for each pass was also assessed and entered on this form. Ranking categories similar to those of the Railroad Pass Evaluation Report (Fugro National Inc., 1979a) were used. These categories are described in Figure 5-2. The data from the completed pass evaluation sheets were compiled on the Pass Evaluation Summary Table, Appendix C. The passes are alphabetically listed along with comments on their locations, topographic data, and geotechnical and engineering considerations. Geographical and environmental considerations are also presented. The geographical locations of all the passes studied are depicted in Drawing 5-2.

In order to evaluate the mountain passes for DTN alignment for intervalley connections, the following factors were considered.

- o Geotechnical evaluation;
- o Engineering evaluation;
- o Topographic conditions;
- o Geographic and environmental considerations;
- o Operational versus construction costs; and
- o Cluster configuration.

5.2.1 Geotechnical Evaluation

The geotechnical evaluation consisted of those aspects of foundation engineering and engineering geology most critical to the

MX DTN PASS STUDY

DTN PASS EVALUATION SHEET

PASS NAME: ______________________ STATE ______________

BETWEEN: ________ Valley and ________ Valley in ________ Mt. Range

INSPECTION: OFFICE-TOPO ______ DATE ______ FIELD ______ DATE ______
OFFICE-PHOTO ______ DATE ______

ACCESS: ☐ PAVED ROAD ☐ UNPAVED ROAD ☐ RAILROAD ☐ NONE

TOPOGRAPHY: ELEVATION ______________ LENGTH ______________
GRADE (%) ______________ ORIENTATION ______________

CONSTRICTIONS/
CONSTRUCTION WIDTH: ☐ NO CONSTRICTIONS ☐ CONSTRICTION @ PASS & LOCALLY ☐ ALONG ALIGNMENT ☐ CONSTRICTION AT PASS ☐ CONSTRICTIONS ALONG ENTIRE ALIGNMENT

ALIGNMENT: ☐ NEARLY STRAIGHT ☐ BROAD CURVES ☐ ONE OR TWO SHARP CURVES ☐ MORE THAN TWO SHARP CURVES

DISSECTION/DRAINAGE: ☐ SMOOTH, FEW CROSSINGS ☐ MINOR DISSECTION, SEVERAL OR MORE CROSSINGS ☐ NUMEROUS MOD. DISSECTED CROSSINGS ☐ ONE MAJOR DRAINAGE (REQ. SPECIAL X-ING) ☐ MORE THAN ONE MAJOR CROSSING

SIDE SLOPES: ☐ NO SIDE SLOPES WITHIN CONSTRUCTION AREA ☐ FLATTER THAN 3:1 ☐ BETWEEN 3:1 AND 2:1 ☐ BETWEEN 2:1 AND 1:1 ☐ STEEPER THAN 1:1 ☐ OTHER, ______________

GEOTECHNICAL CONSIDERATIONS:

FOUNDATION MATERIALS: ☐ ALLUVIAL FAN ☐ ALLUVIUM ☐ DUNES/UNCONSOLIDATED MATERIALS ☐ ROCK ☐ ROCK TYPES ______________

SLOPE STABILITY/
LANDSLIDES: ☐ NO LANDSLIDES OBSERVED ☐ EXISTING LANDSLIDES OUTSIDE ALIGNMENT ☐ EXISTING SLIDES WITHIN ALIGNMENT

EXCAVATABILITY/
HARDNESS: ☐ EASY GRADING ☐ MODERATE GRADING W/SOME DIFFICULTY ☐ DIFFICULT GRADING IN MANY AREAS ☐ RESISTANT ROCK ☐ PROBABLE CALICHE

FLOOD POTENTIAL: ☐ LOW ☐ MODERATE ☐ HIGH (SIDESTREAMS & MAIN CHANNELS)

DEPOSITION/
DUNE ACTIVITY: ☐ NO ACTIVITY ☐ ACTIVE CHANNEL DEPOSITION/EROSION ☐ ACTIVE/POTENTIAL DUNE MIGRATION

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EXAMPLE OF DTN FIELD RECONNAISSANCE EVALUATION SHEET – SIDE 1

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

30 NOV 81 FIGURE 5-1 1 OF 2

MX DTN PASS STUDY

DTN PASS EVALUATION SHEET (Cont)

GEOTECHNICAL CONSIDERATIONS (Cont):

SEISMIC CONSIDERATIONS ☐ NO EVIDENCE OR REPORT ☐ QUATERNARY FAULTING ☐ GROUND CRACKS, LURCHING

CONSTRUCTION CONSIDERATIONS:

GRADING REQ: ______

SIDESLOPE STABILITY: ☐ LITTLE OR NO POTENTIAL FOR SLIDES WITHIN ALIGNMENT ☐ POTENTIAL FOR SLIDES FROM CONSTRUCTION

ALTERNATE ALIGNMENTS ______

DRAINAGE STRUCTURES ______

CULTURAL/ENVIRONMENTAL RESTRICTIONS:

EXISTING ROADS/UTILITIES ______
FORESTS, WILDLIFE, SENSITIVE AREAS ______
LAND USE/OWNERSHIP ______

EVALUATION:

EASY ______
MODERATE ______
DIFFICULT ______
VERY DIFFICULT ______

REMARKS: ______

Reviewer (Print) ______ Date ______

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EXAMPLE OF DTN FIELD RECONNAISSANCE EVALUATION SHEET – SIDE 2

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

30 NOV 81 FIGURE 5-1 2 OF 2

Ranking	Category	Description
I	Easy	Minor alignment, grade, and drainage problems; light to moderate grading, none to one major structure
II	Moderate	Some alignment, grade, and drainage problems; moderate grading, one major structure
III	Difficult	One or more major alignment, grading, and drainage problems; moderate to heavy grading; some deep cuts or fills; none to more than one major structures
IV	Very Difficult	Several severe alignment, grading, and drainage problems; heavy grading requiring deep cuts or fills over much of alignment; possible slope instability
V	Avoid if Possible	Alignment and grade unacceptable without excessively deep, long cuts and fills; major slope stability problems

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DESCRIPTION OF OVERALL PASS EVALUATION RANKING CATEGORIES

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

30 NOV 81

FIGURE 5-2

route feasibility. Major factors considered were constructibility, road bed performance after construction, foundation materials, slope stability, flood potential, and deposition or erosion activity.

5.2.2 Engineering Evaluation

The engineering evaluations were based on visual inspection of the specific locations, taking into consideration the amount of grading required, ease of excavation, constrictions observed, alignment, number of drainages, and any major structure required. Consideration was also given to alternate alignments.

5.2.3 Topographic Conditions

To aid in describing and evaluating the individual passes, topographic maps were studied to estimate the maximum percent grade, the length of the pass, the elevation at the summit, and the pass orientation. The maps used were the U.S. Geological Survey, 7 1/2', 15', and 2° topographic maps and some 1:62,500 scale topographic maps made by Ertec Airborne Systems, Inc.

5.2.4 Geographic and Environmental Considerations

General geographic and environmental observations were made during the field reconnaissance studies. Status and location of existing roads, utilities, national forests, wildlife preserves, sensitive areas, land use, and ownership were considered.

5.2.5 Operational Versus Construction Costs

Cases where use of a more difficult pass would shorten a segment of DTN were studied relevant to their overall cost. These evaluations were considered in the overall ranking of the passes.

5.2.6 Cluster Configuration

Cluster configuration and location has played an important role in determining DTN alignment and alternate pass selection. In many instances, field reconnaissance studies were made to check passes that may permit realigning the DTN to allow a more favorable cluster layout.

6.0 EVALUATION OF OPTIMUM DTN ROUTINGS AND ASC LOCATIONS

For this discussion, the DDA, within which the DTN will be routed and the ASCs will be sited, has been divided into four areas as follows:

Central Area: (Nevada)	Delamar, Pahroc, Dry Lake, Muleshoe, Cave, White River, Coal, Garden, Penoyer, Lake, Spring, and Hamlin valleys;
Western Area: (Nevada)	Railroad (south), Hot Creek, Reveille, Big Sand Springs, Stone Cabin, Ralston, Monitor (south), and Big Smoky valleys;
Northwestern Area: (Nevada)	Jakes, Railroad (central and north), Newark, Long, Butte, Antelope, Kobeh, Monitor (north), and Little Smoky valleys; and
Eastern Area: (Utah)	Snake, Tule, Fish Springs Flat, Dugway, Whirlwind, Sevier Desert, Sevier Lake, Wah Wah, and Pine valleys.

In each of the above areas, the majority of the valleys are either contiguous or separated by passes which provide relatively easy access. In these situations, major engineering or geotechnical factors did not govern the routing, and the DTN route was developed according to the requirements and efficiency of the shelter layouts. Environmental factors were evaluated along the proposed DTN route alternatives. Environmental exclusions were avoided and only those considerations regarded as significant will be mentioned in the evaluations. The issues of less environmental concern are not presented. When a route is said to be "selected", it refers to the selection of a "preferred alternative" over the other alternatives. The remaining alternatives then become the alternate routes. Subsequent discussion will be limited to those situations where

siting factors dictated that more than one alignment be considered.

6.1 DTN AND ASC WITH MOB AT COYOTE SPRING VALLEY, NEVADA

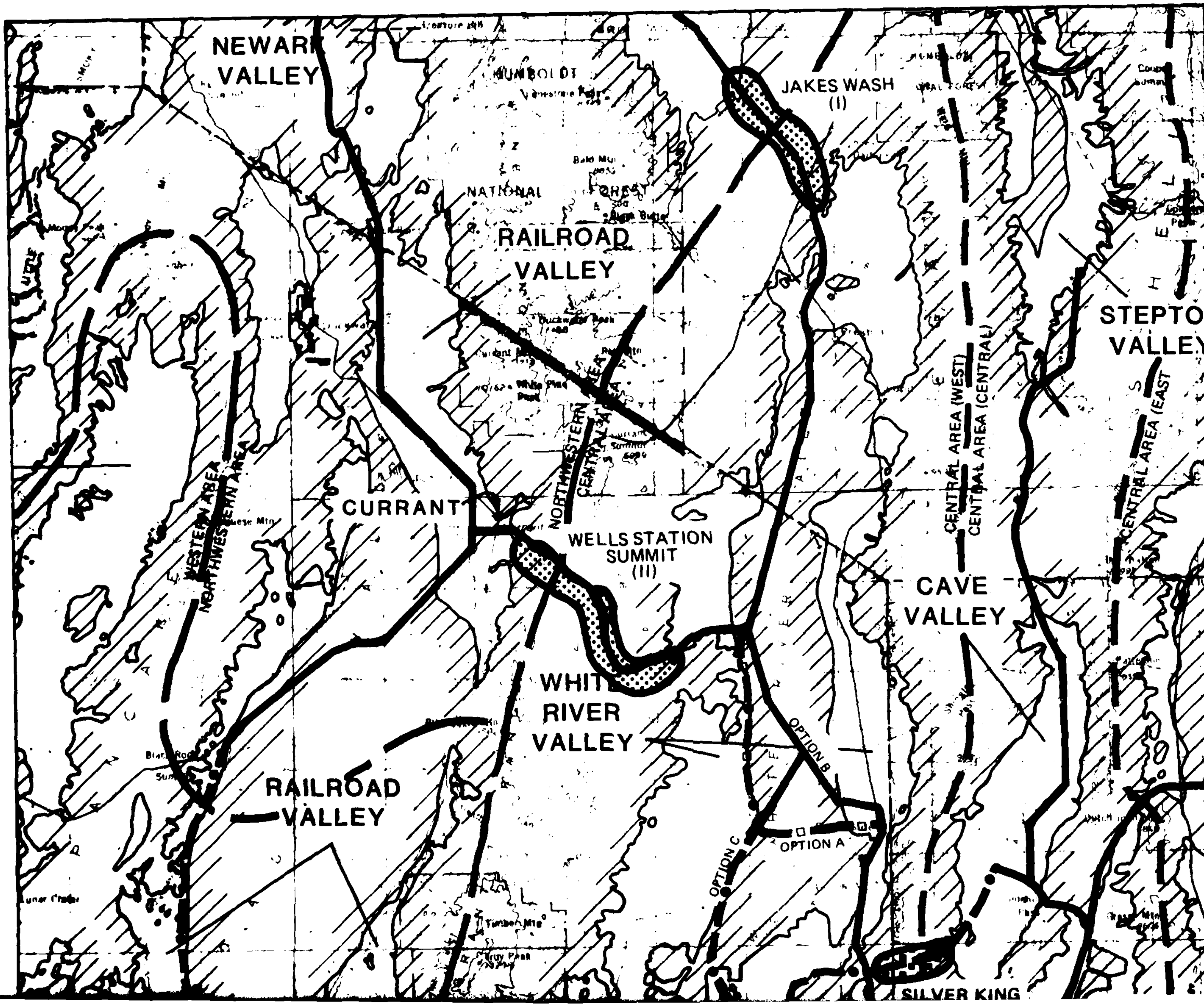
The MOB in Coyote Spring Valley is 30 miles (48 km) south of Delamar Valley along Highway 93. The Designated Assembly Area (DAA) is in the northern portion of the MOB and immediately north of the Lincoln-Clark counties line.

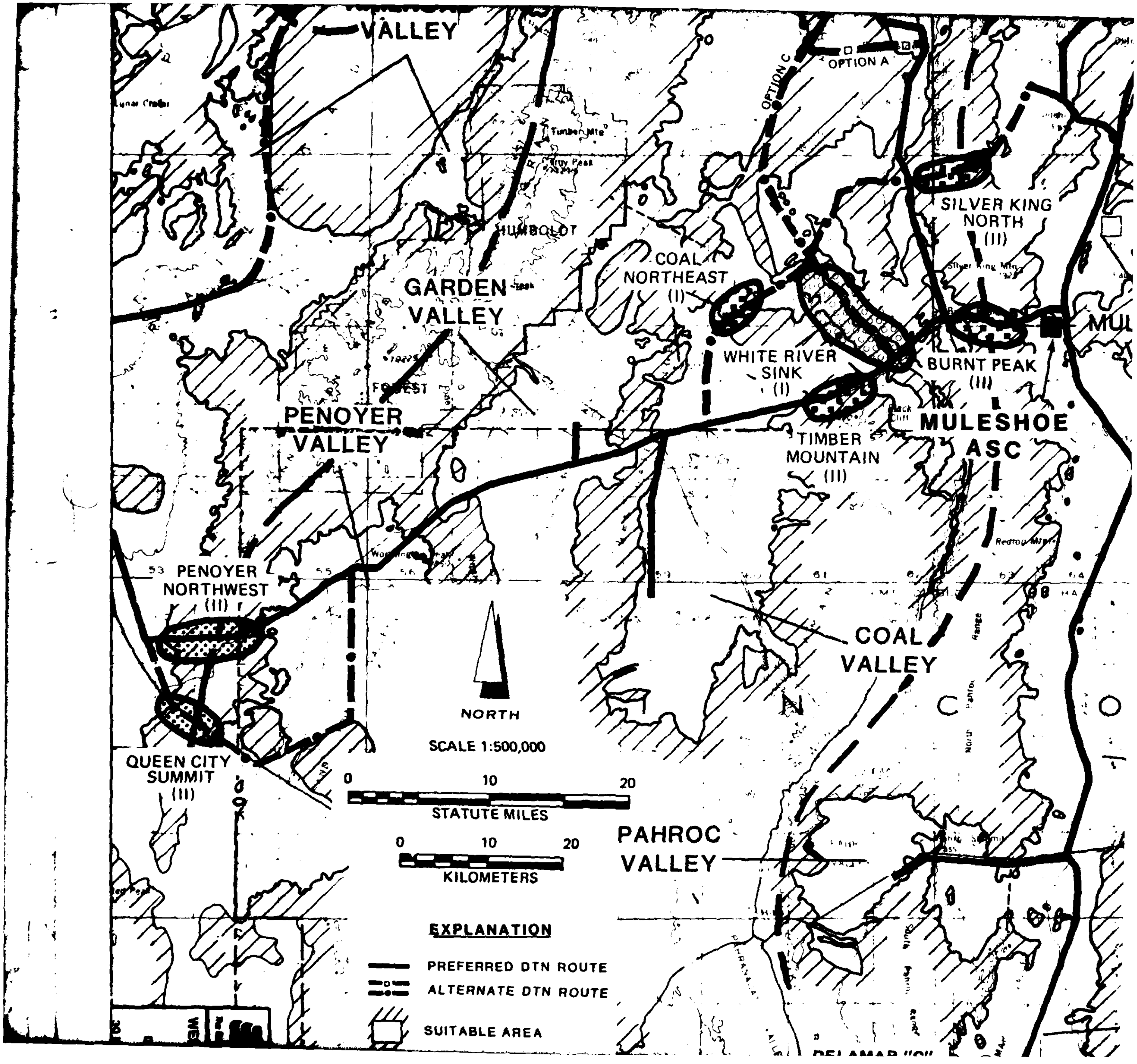
6.1.1 DTN between MOB and DDA

Three passes, Delamar A, B, and C (Figure 6-1), were identified and evaluated as entrances into Delamar Valley (Ertec Western, Inc., 1981a). Delamar A and B alignments are the same alignments except at the southern end. Delamar A extends further south, while Delamar B angles more to the southwest into the Pahranagat National Wildlife Refuge. Delamar A alignment is preferred over alignment B because A does not enter the wildlife refuge. Delamar C alignment is to the west of Delamar alignments A and B and represents an even longer intrusion into the Pahranagat National Wildlife Refuge.

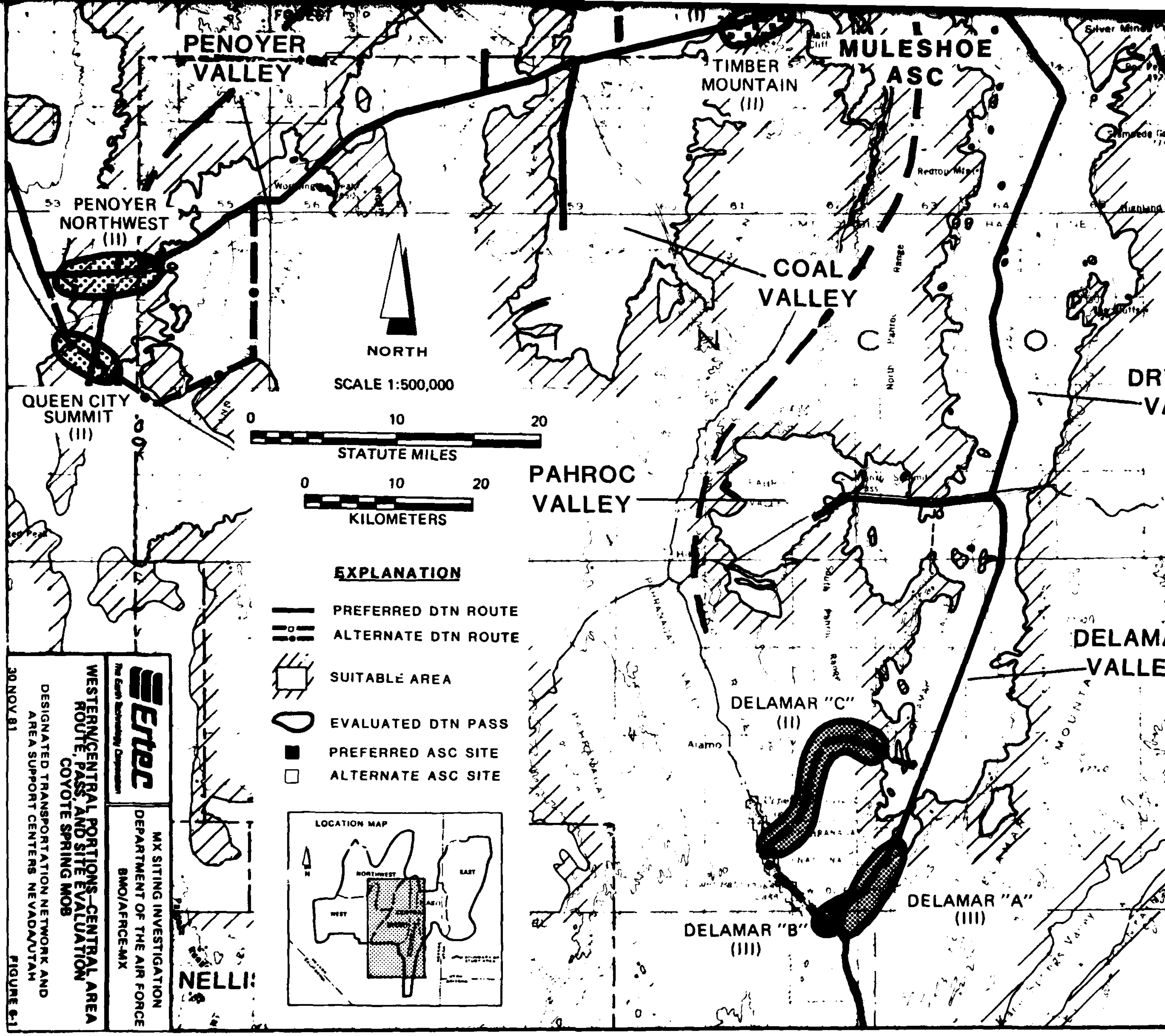
The advantages and disadvantages of Delamar A and C alternatives are summarized as follows.

	Advantages	Disadvantages
Delamar A	Shorter pass and overall route	Steeper grade (five to seven percent)
	Avoids wildlife refuge	More difficult construction (cuts into rock); higher per-mile costs
		Wilderness study area to southeast


NEWARK VALLEY
RAILROAD VALLEY
HUMBOLDT
NATIONAL
FOREST
JAKES WASH (I)
CENTRAL AREA (WEST)
CENTRAL AREA (CENTRAL)
CENTRAL AREA (EAST
STEPTO VALLEY
CAVE VALLEY
NORTHWESTERN
CENTRAL AREA
WELLS STATION SUMMIT (II)
CURRANT
WESTERN AREA
NORTHWESTERN AREA
WHITE RIVER VALLEY
RAILROAD VALLEY
OPTION A
OPTION B
OPTION C
SILVER KING



VALLEY
OPTION A
OPTION C
SILVER KING
NORTH
(II)
HUMBOLDT
GARDEN
VALLEY
COAL
NORTHEAST
(I)
WHITE RIVER
SINK
(I)
BURNT PEAK
(III)
MULESHOE
ASC
FOREST
PENOYER
VALLEY
TIMBER
MOUNTAIN
(II)
PENOYER
NORTHWEST
(II)
COAL
VALLEY
NORTH
SCALE 1:500,000
QUEEN CITY
SUMMIT
(II)
0
10
20
STATUTE MILES
0
10
20
KILOMETERS
PAHROC
VALLEY
EXPLANATION
PREFERRED DTN ROUTE
ALTERNATE DTN ROUTE
SUITABLE AREA



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WESTERN/CENTRAL PORTIONS—CENTRAL AREA
ROUTE, PASS, AND SITE EVALUATION
COYOTE SPRING MOB

DESIGNATED TRANSPORTATION NETWORK AND
AREA SUPPORT CENTERS NEVADA/UTAH

30 NOV 81 FIGURE 6-1

	Advantages	Disadvantages
Delamar C	Lower grade (three percent)	Route through wildlife refuge
	Less rock excavation	14 miles (23 km) longer
	Further away from wilderness study area	Routed up a wash; subsubject to flooding.

Delamar A was chosen as the DTN route access into Delamar Valley after considering the lower overall construction costs, the shorter operational distance, and the lesser amount of environmental impact.

An alternate DTN route between the MOB and Pahroc Valley, which coexisted with Highway 93, was deemed not practical. The route was determined to be unacceptable because of its environmental sensitivity. The route crosses the full north-south length of the Pahranagat National Wildlife Refuge and bisects the small communities of Alamo and Ash Springs.

6.1.2 DTN in Central Area, Nevada

Because of its contiguous nature and the relatively easy passes between the intervening valleys in the central and eastern portion of the Central Area, development of DTN routing and shelter layout progressed simultaneously. No significant engineering or geotechnical decisions other than shelter layout considerations were needed to determine the DTN.

The western portion of the Central Area can be accessed from Dry Lake, Muleshoe, and Cave valleys by using one of several passes. The passes are Burnt Peak (Rank II, between Dry Lake and White River valleys); Timber Mountain (II, White River and Coal); Silver King (II, Muleshoe and White River); Silver King

North (II, Cave and White River); and Coal Northeast (I, White River and Coal). The Burnt Peak and Timber Mountain pass combination was selected because they represent the earliest exit and shortest route from the central portion to the western portion of the Central Area without loss of a cluster.

Once into the western portion of the Central Area, the DTN diverges to the southwest into Coal and Garden valleys and north into White River Valley. Studies were performed to determine the optimal routing in both of these directions.

In White River Valley, an environmental study (HDR, 1981b) concluded that this valley is sensitive from a biological as well as archaeological perspective. Because of the proximity to sensitive areas, all potential DTN routes north and across the valley would likely cause indirect impacts on a number of resources.

Three options (Figure 6-1) were studied for crossing White River Valley from Burnt Peak. The results are summarized below:

Options	Advantages	Disadvantages
A (up east side and straight across valley (E-W)	Coexists with Hwy 38 for 21.5 miles (35 km) (less environmental impact than Option C)	Bisects valley north and adjacent to wildlife refuge
	Less dissection of central White River Valley	Primary DTN segment 6 miles (10 km) longer than Option B
B (Up east side and diagonally across valley, SSE-NNW)	Primary DTN 6 miles (10 km) shorter than Option A	Dissects central White River Valley

Options	Advantages	Disadvantages
B (Cont)	Coexists with Hwy 38 for 21.5 miles (35 km) (less environmental impact than Option C)	Longer secondary DTN
C (Up west side, S-N)	Less miles of DTN to be constructed because of diversion from common portion, 4.5 miles (7 km) closer to Timber Mountain Pass	Does not coexist with existing highway Adjacent to west side of wildlife refuge Southern 10 miles (16 km) located in wash or across numerous deep cross drainages

Option B was selected as the most optimal route after considering the potential environmental impacts and the overall construction costs.

To determine the optimal routing to the southwest into Coal and Garden valleys, a study was performed by Ertec. This study examined the option of using Coal Northeast Pass if Timber Mountain Pass was not available due to potential conflicts with existing mining rights in the pass. This was done in combination with the previously discussed three options crossing White River Valley.

It was concluded that the combination of using Timber Mountain Pass to go west into Coal Valley and using Option B to cross White River Valley (north along the highway and then diagonally across) will be the optimum route.

6.1.3 DTN Connections from Central to Western and Northwestern Areas, Nevada

Of the potential valley connections available for exit from the Central Area to the west and the northwest, only four passes were deemed acceptable.

Connections	Passes (Rank)
Between Penoyer and Railroad (south) valleys	Penoyer Northwest (II), and Queen City Summit (II)
Between White River and Railroad (central) valleys	Wells Station Summit (II)
Between White River and Jakes valleys	Jakes Wash (I)

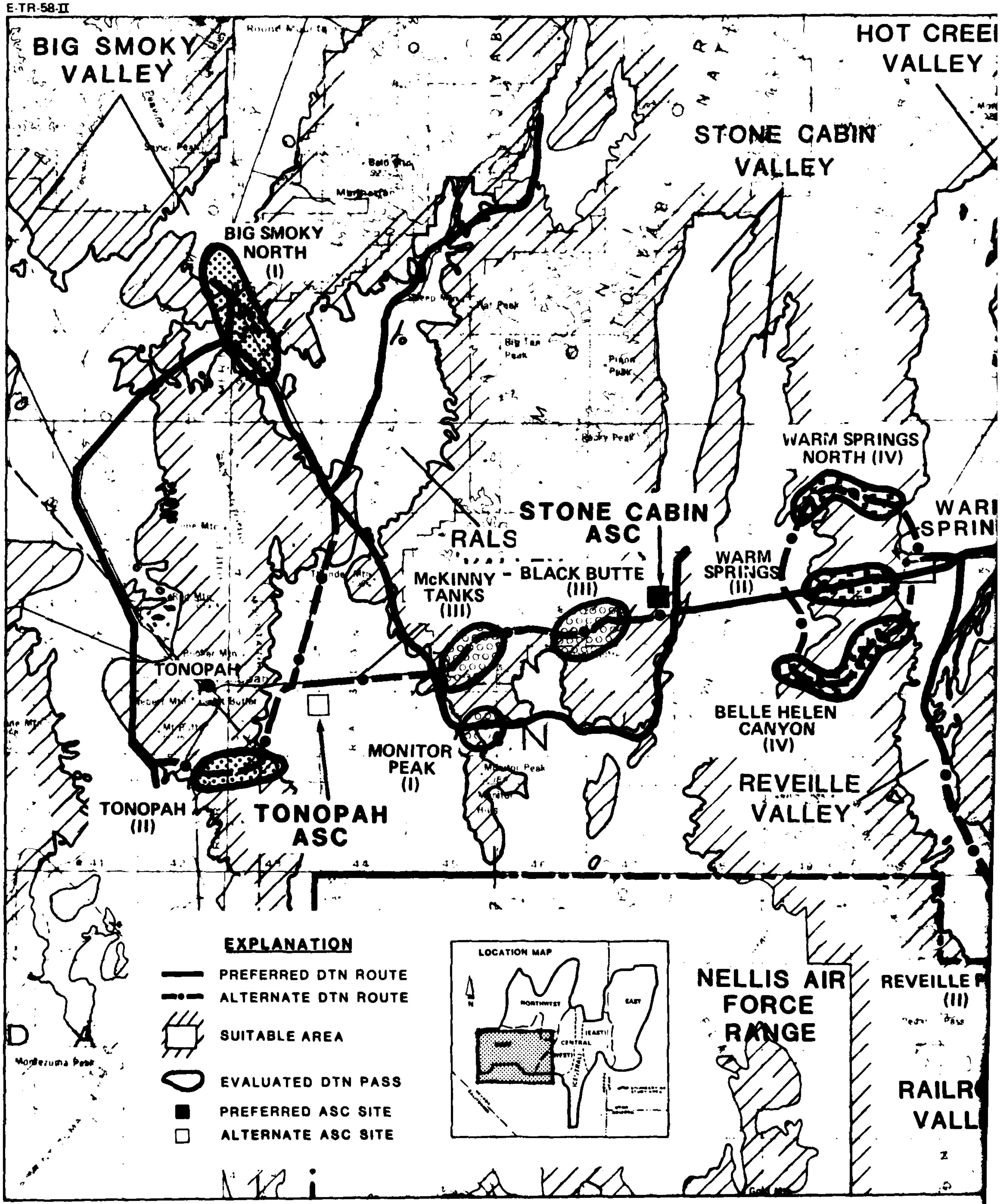
Penoyer Northwest Pass was selected as the exit to the Western Area over Queen City Summit because there will be less DTN to construct, operating distance will be shorter, and the interface with the proposed shelter layouts in the valleys will be easier, and no significant environmental issues affected the choices.

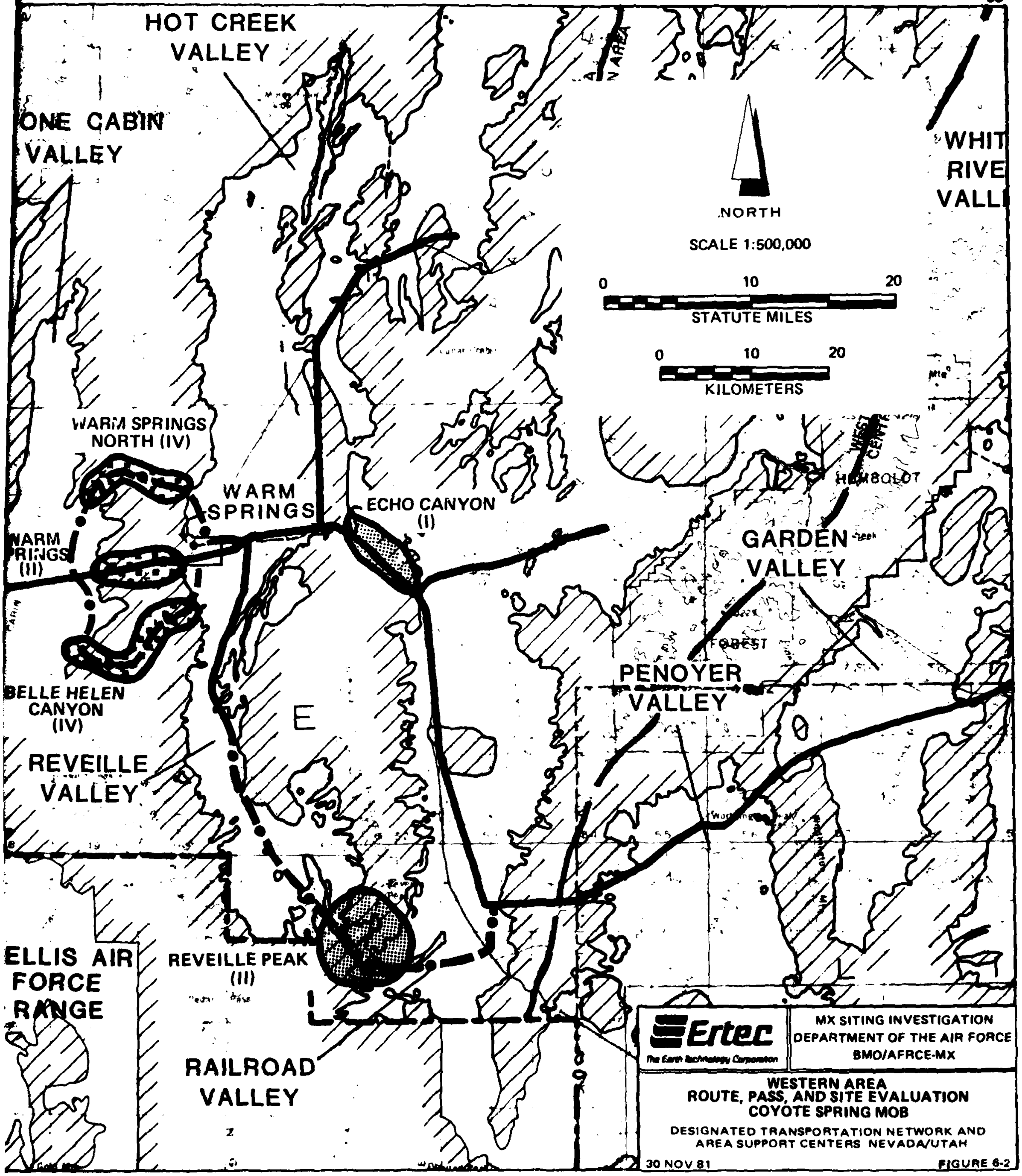
The Wells Station Summit Pass was selected as the most acceptable pass to provide direct access into the Northwestern Area and to the Newark ASC. Although it is a long pass and involves some difficult construction for portions of this route, it is preferred over any of the other alternates. Other alternatives (i.e., through Railroad [south] or Jakes valleys) would require much longer primary DTN and increased operational time to the Newark ASC. The decision to use Wells Station Summit Pass was confirmed after a field reconnaissance was performed and the road constructibility within this pass established.

6.1.4 DTN in Western Area, Nevada

After entering southern Railroad Valley through Penoyer Northwest Pass, the DTN alignment parallels state and federal highways across southern Railroad, Hot Creek, and Stone Cabin valleys (Figure 6-2). Echo Canyon Pass (I) was selected as the connection between southern Railroad and Reveille/Hot Creek valleys in all DTN studies. The use of Reveille Peak Pass would add significantly to the total DTN length. Between Reveille and Stone Cabin valleys, there are three passes. These passes are Warm Springs (II), Warm Springs North (IV), and Belle Helen Canyon (IV). Warm Springs Pass was selected because it is the most direct route and presents the least construction problems.

Access is preferred from Stone Cabin to Ralston Valley through Monitor Peak Pass (I) so as to avoid the difficult passes of Black Butte (III) and McKenney Tanks (III). The preferred DTN route through Ralston Valley is dependent on the access into Big Smoky Valley. While considering the passes to the south of Tonopah as access to Big Smoky Valley, the DTN was routed across Ralston Valley, coexisting with Highway 6. Alternative passes for access from Ralston Valley into Big Smoky Valley from both the south and north were examined. It was determined that the northern route requires less DTN construction miles and will avoid potential interference with mining claims and private properties encountered in the southern route. With the selection of Big Smoky North Pass as the connection between Ralston and Big Smoky valleys, the DTN through Ralston Valley


BIG SMOKY VALLEY
HOT CREEK VALLEY
STONE CABIN VALLEY
BIG SMOKY NORTH (I)
WARM SPRINGS NORTH (IV)
STONE CABIN ASC
RALS
McKINNY TANKS (III)
BLACK BUTTE (III)
WARM SPRINGS (II)
TONOPAH
BELLE HELEN CANYON (IV)
MONITOR PEAK (I)
REVEILLE VALLEY
TONOPAH (III)
TONOPAH ASC
EXPLANATION
PREFERRED DTN ROUTE
ALTERNATE DTN ROUTE
SUITABLE AREA
EVALUATED DTN PASS
PREFERRED ASC SITE
ALTERNATE ASC SITE
LOCATION MAP
NORTHWEST
EAST
CENTRAL
NELLIS AIR FORCE RANGE
REVEILLE (II)
RAILR
VALL


HOT CREEK VALLEY
ONE CABIN VALLEY
WHIT RIVE VALL
NORTH
SCALE 1:500,000
0 10 20
STATUTE MILES
0 10 20
KILOMETERS
WARM SPRINGS NORTH (IV)
WARM SPRINGS
ECHO CANYON (I)
ARM PRINGS (III)
GARDEN VALLEY
BELLE HELEN CANYON (IV)
PENOYER VALLEY
E
REVEILLE VALLEY
ELLIS AIR FORCE RANGE
REVEILLE PEAK (II)
RAILROAD VALLEY
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COYOTE SPRING MOB
DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH
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FIGURE 6-2

was optimized by going diagonally across the valley and to the northeast of Thunder Mountain. Once reaching the junction of Highways 82 and 8A, the DTN coexists with Highway 8A. Access into Monitor Valley from Ralston Valley is through Monitor South Pass (II).

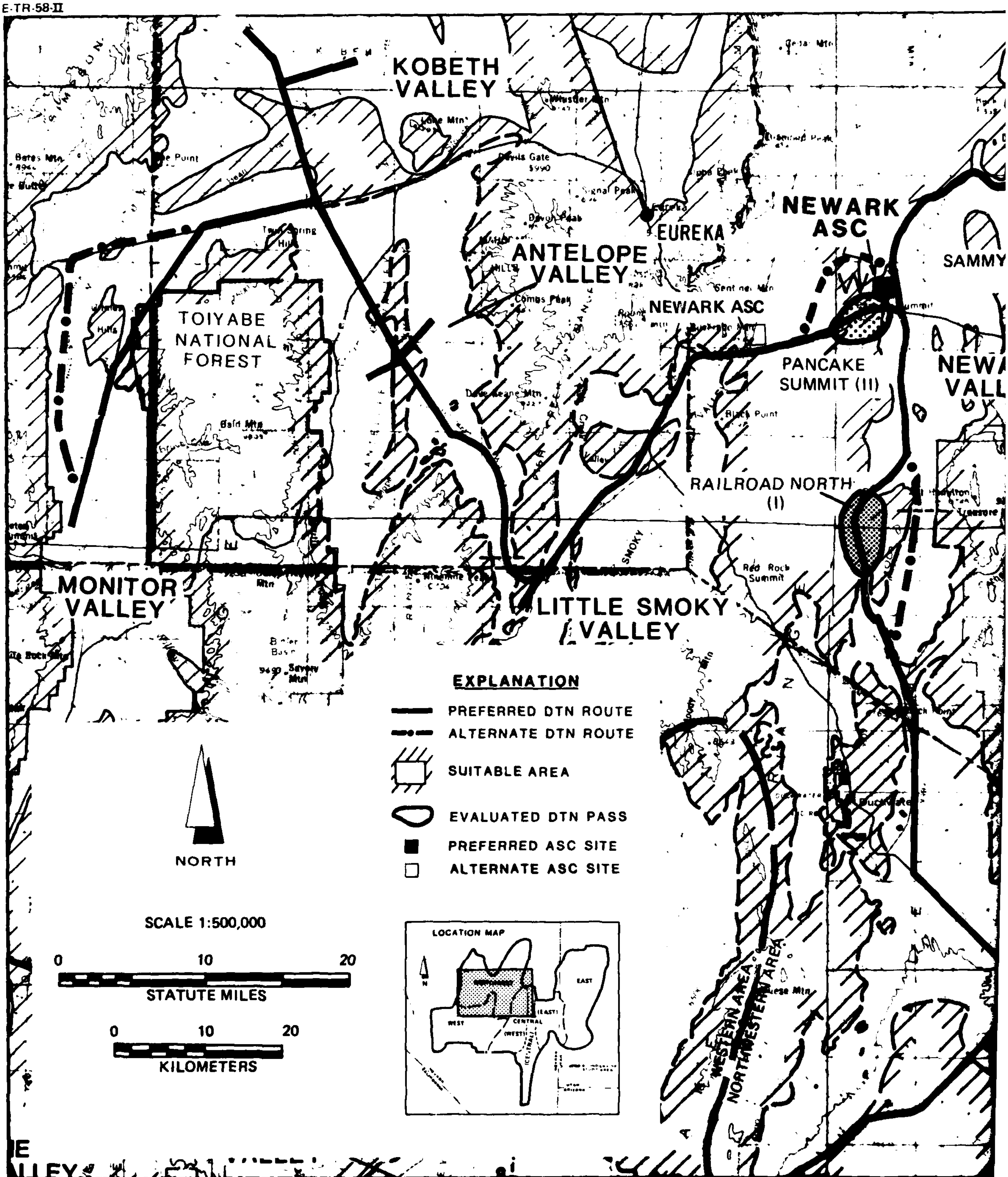
6.1.5 DTN in Northwestern Area, Nevada

From Wells Station Summit in central Railroad Valley, the DTN turns north, avoiding the community of Currant, and traverses the Northwestern Area. Various minor DTN realignments occurred in the Northwest Area (Figure 6-3).

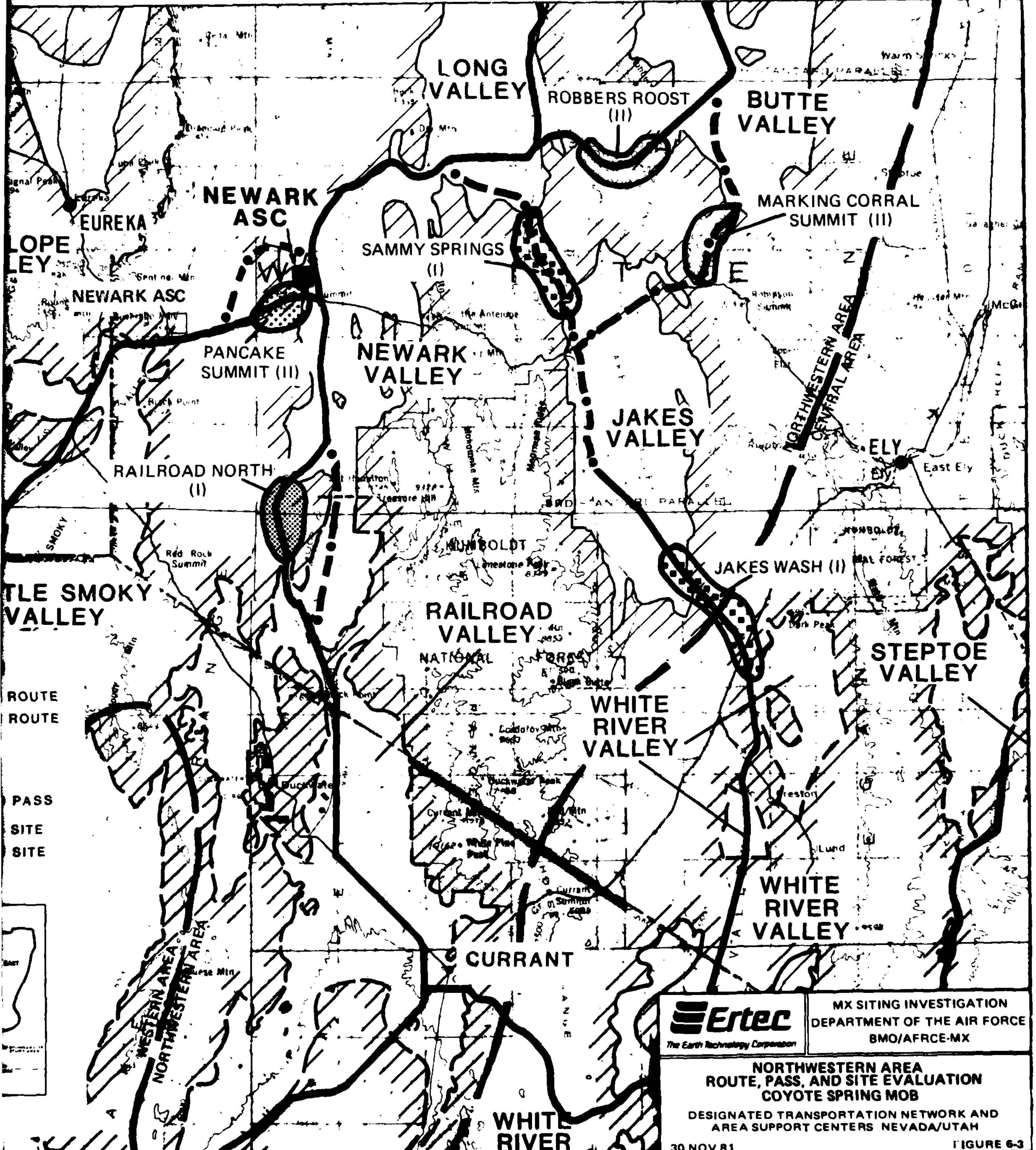
Railroad North Pass is divided by a north-south trending ridge. The eastern portion contains shelters and does not provide adequate clearance for both the clusters and a DTN. Thus the DTN uses the less desirable, but still acceptable western portion.

Originally, the DTN in Newark Valley used the valley floor to cross from the eastern to the western portions of the valley. After comparing the difficulty of using Pancake Summit (U.S. Highway 50) versus the additional length of DTN needed to stay on the valley floor, Pancake Summit was determined to be the more desirable route.

Numerous DTN alignments into northern Monitor Valley were proposed, each depending on the cluster layout at the time. Later stages of shelter layout in this area permitted routing the DTN along the alignment of State Highway 82 in the eastern portion


KOBETH VALLEY
ANTELOPE VALLEY
EUREKA
NEWARK ASC
NEWARK ASC
SAMMY
NEWARK VALL
PANCAKE SUMMIT (II)
RAILROAD NORTH (I)
TOIYABE NATIONAL FOREST
MONITOR VALLEY
LITTLE SMOKY VALLEY
EXPLANATION
PREFERRED DTN ROUTE
ALTERNATE DTN ROUTE
SUITABLE AREA
EVALUATED DTN PASS
PREFERRED ASC SITE
ALTERNATE ASC SITE
NORTH
SCALE 1:500,000
0
10
20
STATUTE MILES
0
10
20
KILOMETERS
LOCATION MAP
EAST
WEST
CENTRAL
WESTERN AREA
NORTHWESTERN AREA

11



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NORTHWESTERN AREA
ROUTE, PASS, AND SITE EVALUATION
COYOTE SPRING MOB

DESIGNATED TRANSPORTATION NETWORK AND
AREA SUPPORT CENTERS NEVADA/UTAH

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FIGURE 6-3

of the valley which bisects a small portion of the Toiyabe National Forest.

For access into Butte Valley, routes were considered through both Marking Coral Summit (II) from Jakes Valley and Robbers Roost Pass (II) from Long Valley. The latter pass was selected because it provided the shorter length of DTN.

Although Jakes Valley is within the Northwestern Area, it can be accessed from the south out of White River Valley through Jakes Wash Pass (I), through Little Antelope Pass (III) along U.S. Highway 50 on the northwest from Newark Valley, or from Long Valley by way of Sammy Springs (I) on the north. All require similar length of road. Jakes Wash Pass was selected over Sammy Springs Pass because of the shorter travel time from the Muleshoe ASC. Little Antelope Pass was rejected on the grounds that it traverses much more rugged terrain than either Jakes Wash or Sammy Springs.

6.1.6 Area Support Centers in Nevada

The ASC locations recommended by SAC in November 1980 were used as the baseline at the beginning of this study. Relocation of the DTN and modification of cluster configuration within valleys in which the ASCs were sited, as well as application of updated siting criteria, prompted adjustments to ASC locations. The discussion for the relocation and description for each ASC in the Central, Western, and Northwestern areas are presented below. The relocation and description of the ASC sites in the Eastern Area (Utah) will be discussed in Section

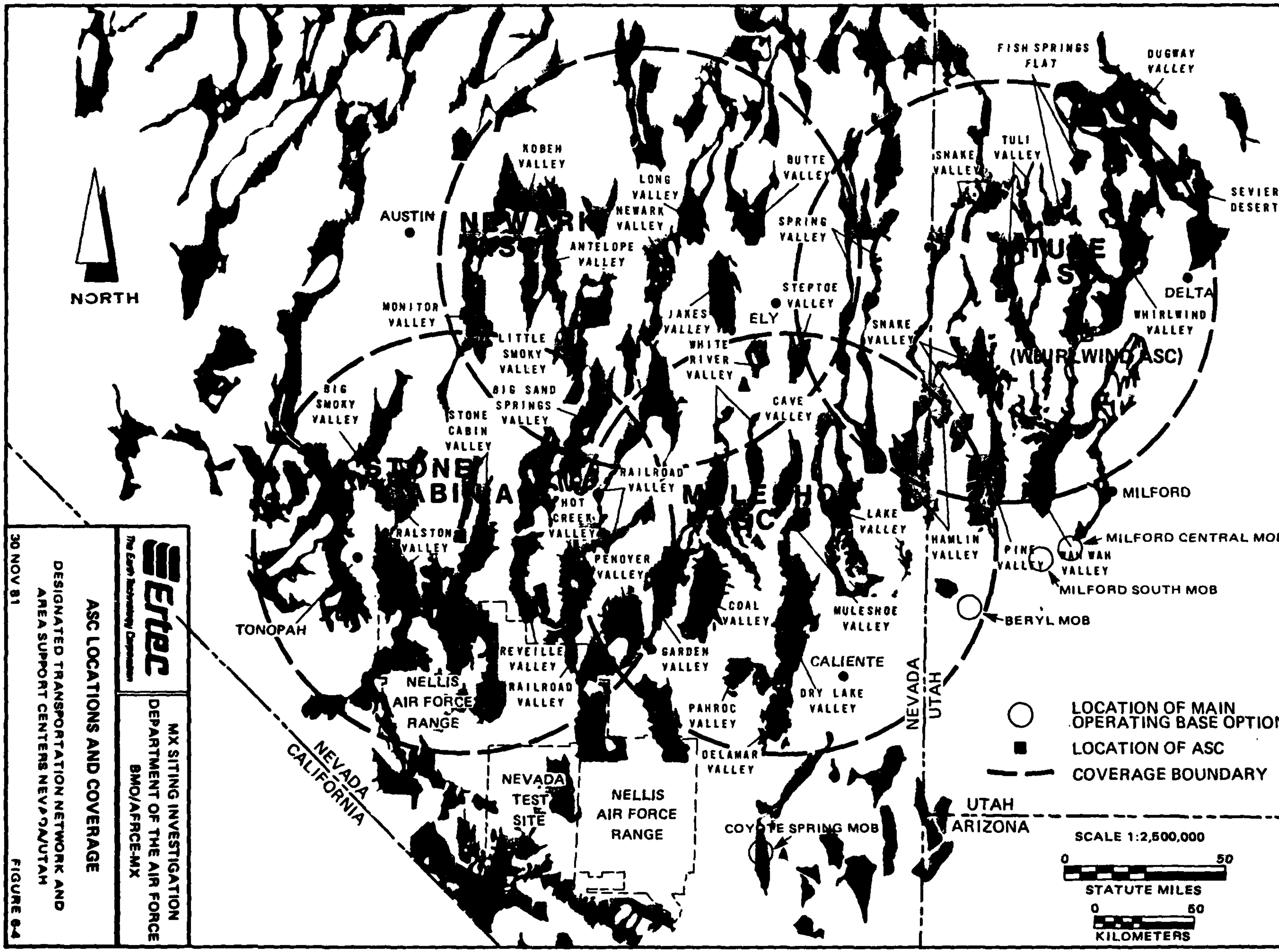
6.1.8. The preferred ASC locations after the required adjustments are shown in Figure 6-4.

6.1.6.1 Muleshoe ASC in Central Area

A number of minor adjustments for the siting of this ASC, all within 12 miles (19 km), were due to changes in the DTN alignment and shelter layouts. The preferred ASC site is located in the extreme southern section of Muleshoe Valley just north of Dry Lake Valley. The junction of the DTN to the western and the eastern portion of the Central Area is approximately 96 miles (155 km) of DTN north of the Coyote Spring MOB. Field and office studies confirmed that the vicinity zone of this ASC is in geotechnically suitable area.

6.1.6.2 Stone Cabin ASC in Western Area

The siting of this ASC in Stone Cabin Valley was also dependent on the shelter layouts and optimization of DTN alignment. The preferred site does not differ more than 10 miles (16 km) from the original location. This general location was also selected during studies by different organizations. The ASC vicinity zone is located about 32 miles (51 km) east of Tonopah, Nevada, on U.S. Highway 6 and at the intersection of the DTN in Stone Cabin Valley. It is 128 DTN miles (206 km) from the Muleshoe ASC. The entire zone is sited in geotechnically suitable area. This location will provide additional service coverage further to the west, if required. During siting studies of the Stone Cabin ASC, a request was made by Nye County, Nevada, to relocate the ASC to county land near Tonopah Airport in Ralston



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ASC LOCATIONS AND COVERAGE

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

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FIGURE 6-4

Valley. A study was made, and it was concluded that this site was not preferred over the present site. The advantages and disadvantages for each site are as follows.

ASC IN STONE CABIN VALLEY

Advantages	Disadvantages
Centered on area to be serviced - Provides full coverage for present clusters in Monitor and Big Sand Springs valleys	Site is 32 miles (52 km) from population center of Tonopah and 22 miles (35 km) from commercial airport
- Provides adequate coverage west for potential expansion of clusters within EIS boundary	Stone Cabin Valley is a designated hydrologic basin
Closer to Muleshoe ASC - Provides more security coverage overlap between ASCs	Pending permits and certificates would exhaust currently available water rights; water for MX would require purchasing water rights
Land Withdrawal from BLM	
Site is on current DTN and U.S. Highway 6	
Only 16 miles (25 km) from Warm Springs	

ASC IN RALSTON VALLEY

Political Advantages on Nye County property	Not along present DTN route through Ralston Valley
Possible co-use with airport facilities Facility closer to populated area - 10 miles (16 km) from Tonopah	Requires 8 miles (13 km) more of constructed DTN for spur road or a total reroute of DTN to coexist with U.S. Highway 6 and State Highway 82
Opens potential areal coverage to the west	Not centered on area to be served; some clusters in Big Sand Springs and Central Monitor would need security waivers

Advantages	Disadvantages
	Increased travel time/distance between ASCs, an additional 32 miles (51 km) beyond Stone Cabin for a total of 144 miles (231 km) from Muleshoe ASC to Ralston ASC

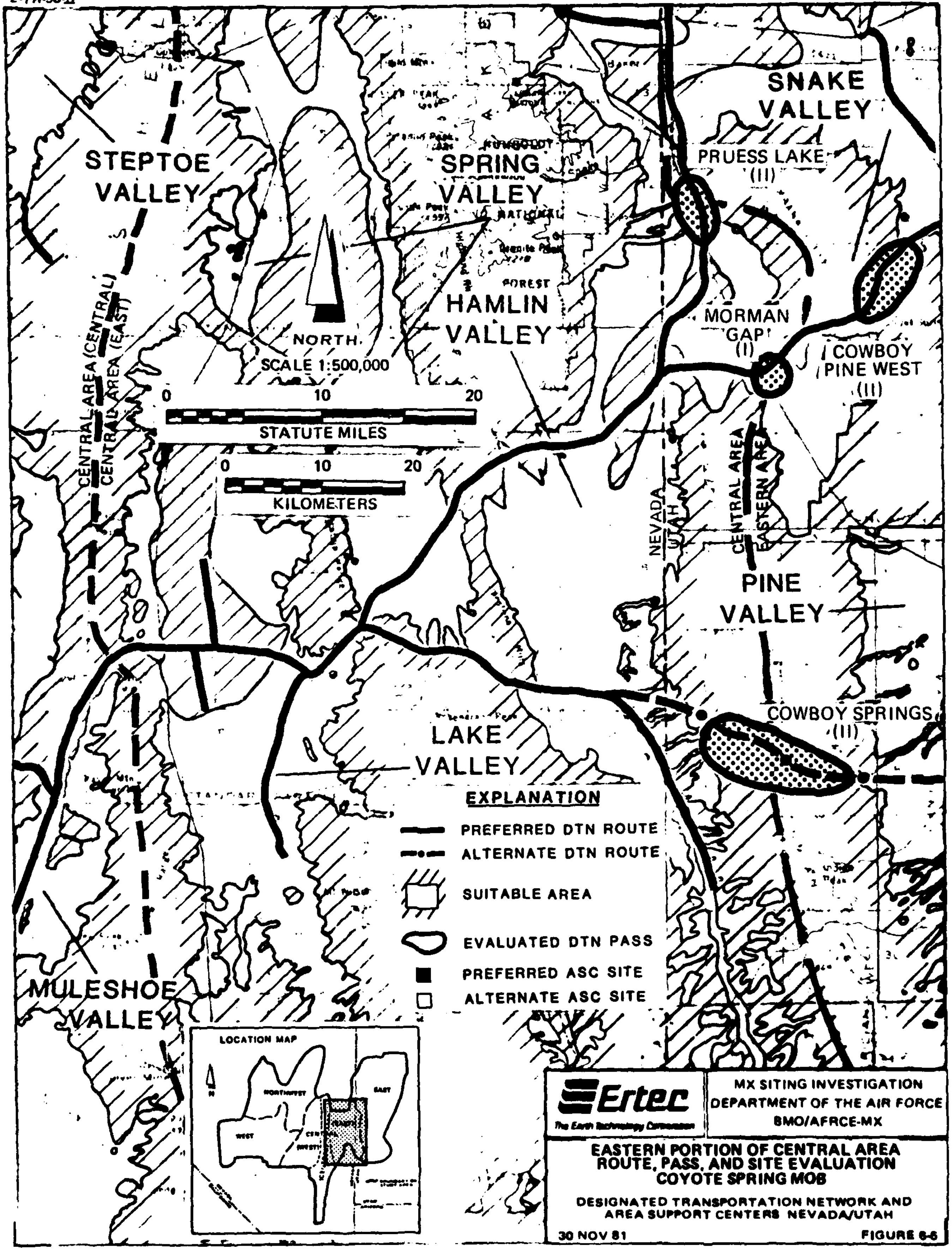
The operational features of the Stone Cabin location are so much more favorable than the Ralston Valley location that Stone Cabin remains the preferred site.

6.1.6.3 Newark ASC in Northwestern Area

For more coverage to the east (in northern Spring Valley, Nevada), the original ASC sited in western Newark Valley was relocated approximately 10 to 14 miles (16 to 23 km) to the east. The revised ASC location is on Highway 50 about 28 miles (45 km) east of Eureka, Nevada, in eastern Newark Valley. This places the ASC at a major DTN intersection and 125 DTN miles (201 km) from the Muleshoe ASC. The ASC vicinity zone is sited in geotechnically suitable area and provides more overlap with the ASC in the Eastern Area than the baseline location.

6 1.7 DTN from Central Area, Nevada, to Eastern Area, Utah

From a Coyote Spring MOB, access to the Eastern Area of the deployment area is through Hamlin Valley (Figure 6-5). Access to the northern Utah valleys (those north of Highway 50) is through both Pruess Lake Pass and the combination of Morman Gap and Cowboy Pine West passes. This latter combination also provides easy access to southern Snake Valley and Pine Valley.


STEPTOE VALLEY
SPRING VALLEY
HAMLIN VALLEY
SNAKE VALLEY
PRUESS LAKE (II)
MORMAN GAP (I)
COWBOY PINE WEST (II)
PINE VALLEY
COWBOY SPRINGS (II)
LAKE VALLEY
MULESHOE VALLEY
CENTRAL AREA (CENTRAL)
CENTRAL AREA (EAST)
CENTRAL AREA
EASTERN AREA
NEVADA
UTAH
NORTH
SCALE 1:500,000
0 10 20
STATUTE MILES
0 10 20
KILOMETERS
EXPLANATION
PREFERRED DTN ROUTE
ALTERNATE DTN ROUTE
SUITABLE AREA
EVALUATED DTN PASS
PREFERRED ASC SITE
ALTERNATE ASC SITE
LOCATION MAP
NORTHWEST
EAST
WEST
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BMO/AFRCE-MX
EASTERN PORTION OF CENTRAL AREA
ROUTE, PASS, AND SITE EVALUATION
COYOTE SPRING MOB
DESIGNATED TRANSPORTATION NETWORK AND
AREA SUPPORT CENTERS NEVADA/UTAH
30 NOV 81
FIGURE 6-6

Southern Pine Valley could be accessed from Hamlin Valley through Cowboy Springs Pass. However, since access to southern Tule and Wah Wah valleys is through southern Snake Valley, it is a much shorter travel distance to use Cowboy Pine West rather than Cowboy Springs Pass.

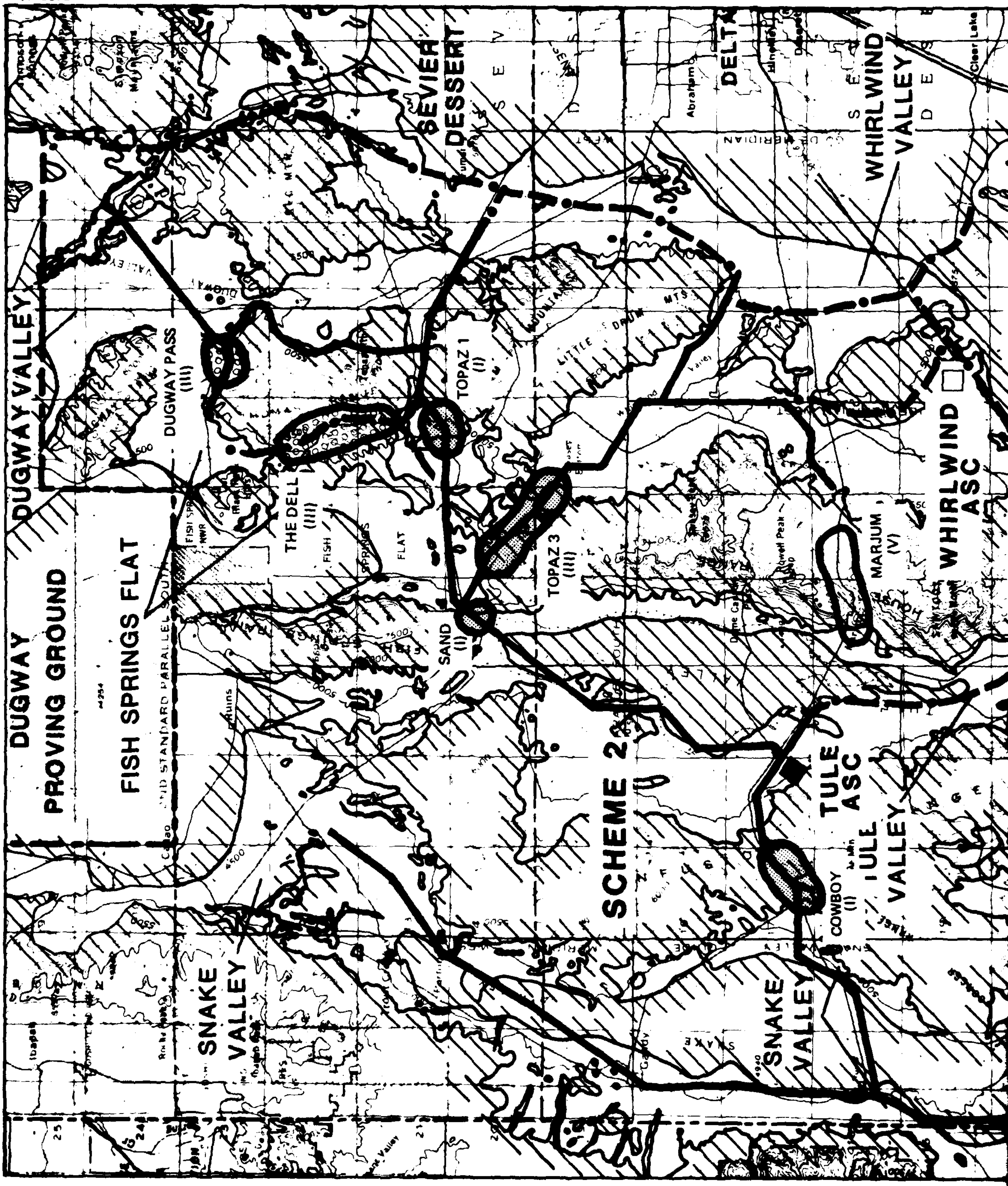
6.1.8 DTN and ASC in Eastern Area, Utah

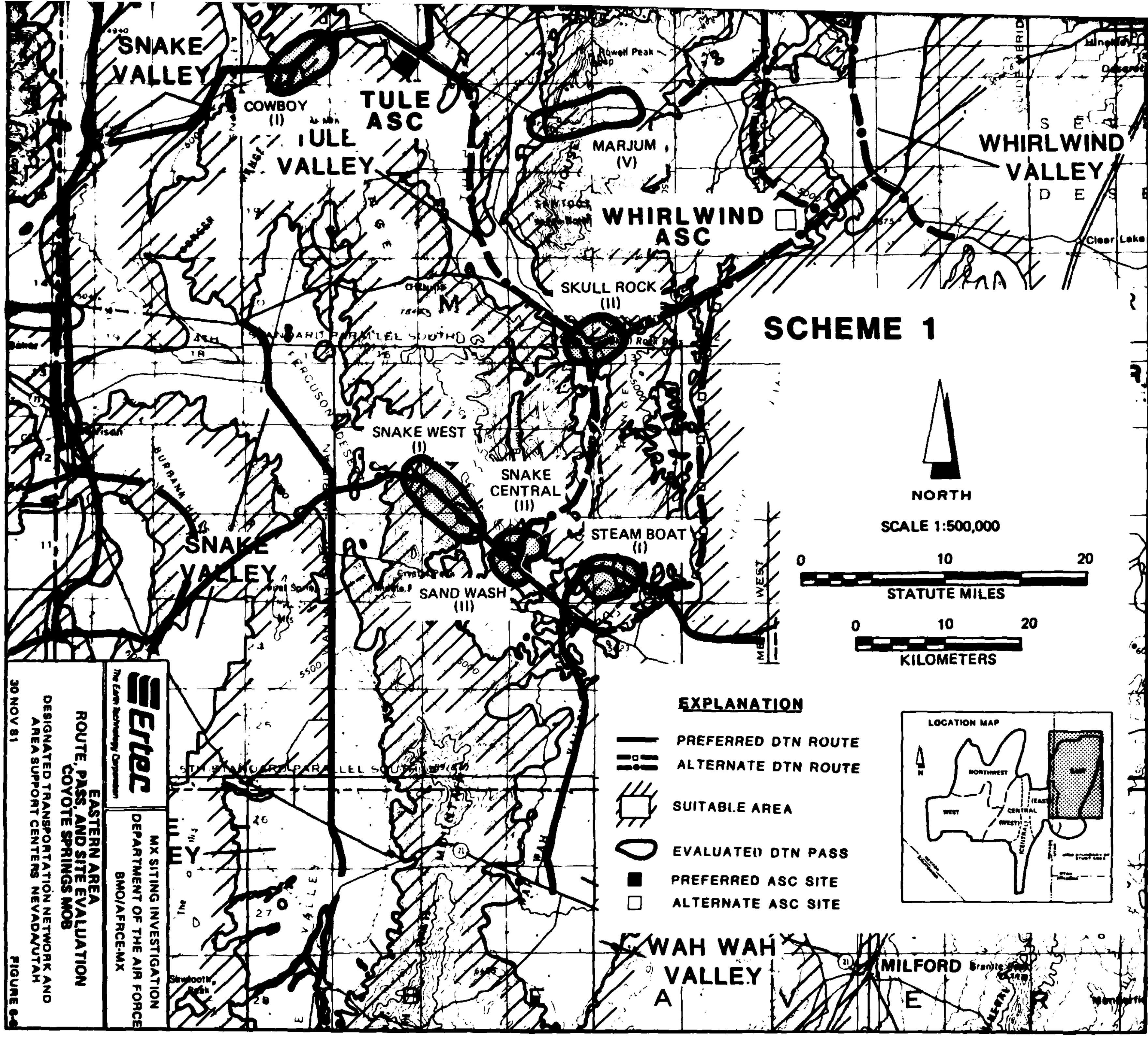
In the Eastern Area, a DTN from Coyote Spring MOB, from west to east, must cross a series of north-south trending, contiguous valleys (Figure 6-6). Once access is made into the Eastern Area, there are various routes to connect these valleys. Two of these routes, as presented in the HDR 10 October 1980 and Ertec 26 September 1980 DTN layouts, use routes through relatively narrow parcels of land in southern Tule and Whirlwind valleys. Due to the narrowness of these parcels of suitable area, it is difficult for a DTN and a cluster to coexist. In southern Tule Valley, the DTN is further complicated by the close proximity of wilderness study areas.

After considering the problems of the DTN routes through either southern Tule or Whirlwind valleys, an alternate scheme was proposed (Ertec, 1981b).

- Scheme 1 (original): This route uses Cowboy Pine West (II) and Snake Central (II) passes from Snake Valley to southern Tule Valley. The route then divides both northward through southern Tule to Skull Rock Pass (II) or through Whirlwind Valley to the remaining northern valleys and southward into Wah Wah Valley. The ASC is situated in Whirlwind Valley about 30 miles (48 km) southwest of Delta in Utah on Highways 6 and 50.

- Scheme 2 (alternate): This route assumes a Cowboy Pass (I) access from Snake Valley into northern Tule and the other


DUGWAY PROVING GROUND
FISH SPRINGS FLAT
DUGWAY VALLEY
DUGWAY PASS
(III)
THE DELL
(III)
TOPAZ 1
(I)
TOPAZ 3
(III)
SAND
(I)
SEVIER
DESSERT
LITTLE DRUM MTS
DELTA
WHIRLWIND
VALLEY
WHIRLWIND
ASC
MARJUM
(V)
SCHEME 2
TULE
ASC
TULE
VALLEY
COWBOY
(I)
SNAKE
VALLEY
SNAKE
VALLEY
STANDARD PARALLEL SOUTH
Clear Lake
Abraham


SCHEME 1
SNAKE VALLEY
COWBOY (I)
TULE ASC
TULE VALLEY
MARJUM (V)
WHIRLWIND VALLEY
WHIRLWIND ASC
SKULL ROCK (II)
SNAKE WEST (I)
SNAKE CENTRAL (II)
STEAM BOAT (I)
SAND WASH (III)
SNAKE VALLEY
WAH WAH VALLEY
MILFORD
Clear Lake
NORTH
SCALE 1:500,000
0 10 20
STATUTE MILES
0 10 20
KILOMETERS
EXPLANATION
PREFERRED DTN ROUTE
ALTERNATE DTN ROUTE
SUITABLE AREA
EVALUATED DTN PASS
PREFERRED ASC SITE
ALTERNATE ASC SITE
LOCATION MAP
NORTHWEST
WEST
CENTRAL
EAST
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COYOTE SPRINGS MOB
DESIGNATED TRANSPORTATION NETWORK AND
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FIGURE 6-6

northern valleys. Cowboy Pine West, Snake Central and Sand Wash (II) passes are used as access into southern Tule. Once in the valley, the route divides to the east into southern Whirlwind Valley (through Steamboat Pass [I]) and south into Wah Wah Valley. The ASC is situated in Tule Valley as shown in Figure 6-6.

The comparison between these schemes is outlined in Table 6-1. The route in Scheme 2 is preferred because it provides shorter travel time, less construction cost, and a more central ASC location.

The recommended ASC vicinity zone in northern Tule Valley is located on old Highway 50 at the DTN intersection. The ASC is sited in geotechnically suitable area. The Tule ASC is a preferred site over the Whirlwind ASC because it is more centrally located, will cover more potential suitable area in northern Spring Valley, and provides a better coverage overlap with Newark ASC.

6.2 DTN AND ASC WITH MOB OPTIONS AT MILFORD OR BERYL, UTAH

The MOB options, Milford South, Milford Central, and Beryl, (Figure 6-7) are sited as follows:

- o Milford South: Milford South MOB is located in Escalante Desert in Iron County, Utah, about 8 miles (12 km) northeast of Lund and north of Union Pacific Railroad;
- o Milford Central: Milford Central MOB is located in Escalante Desert in Beaver County, Utah, about 8 miles (12 km) northeast of Milford South MOB and 24 miles (39 km) southwest of Milford, Utah; and
- o Beryl: Beryl MOB is located in Escalante Desert in Iron County, Utah, about 8 miles (12 km) west of Beryl and north of Union Pacific Railroad.

The following sections will discuss the DTN routing and ASC siting relevant to these MOBs.

COMPARISON OF DTN LENGTHS

Number of Clusters Served	Scheme 1 (miles)	Scheme 2 (miles)	Difference (miles)
20-49 clusters	57.5	64.0	+ 6.5
2-19 clusters	111.0	82.5	-28.5
1 cluster	14.4	7.0	- 7.5
TOTAL	183.0	153.5	-29.5

PRESENT AND PROPOSED DTN LAYOUT OPTION COMPARISON

	Scheme 1 Route with Whirlwind ASC	Scheme 2 Route with Tule ASC
ADVANTAGES	1. Shorter length of high-use DTN	1. Shorter overall DTN length
	2. ASC is closer to Delta	2. ASC relocation would be more centrally located to clusters
DISADVANTAGES	1. Longer overall DTN length	1. Increases length of high-use DTN
	2. ASC location does not cover all future cluster locations	2. ASC is further from Delta

REFERENCE:

ERTEC, 1981b

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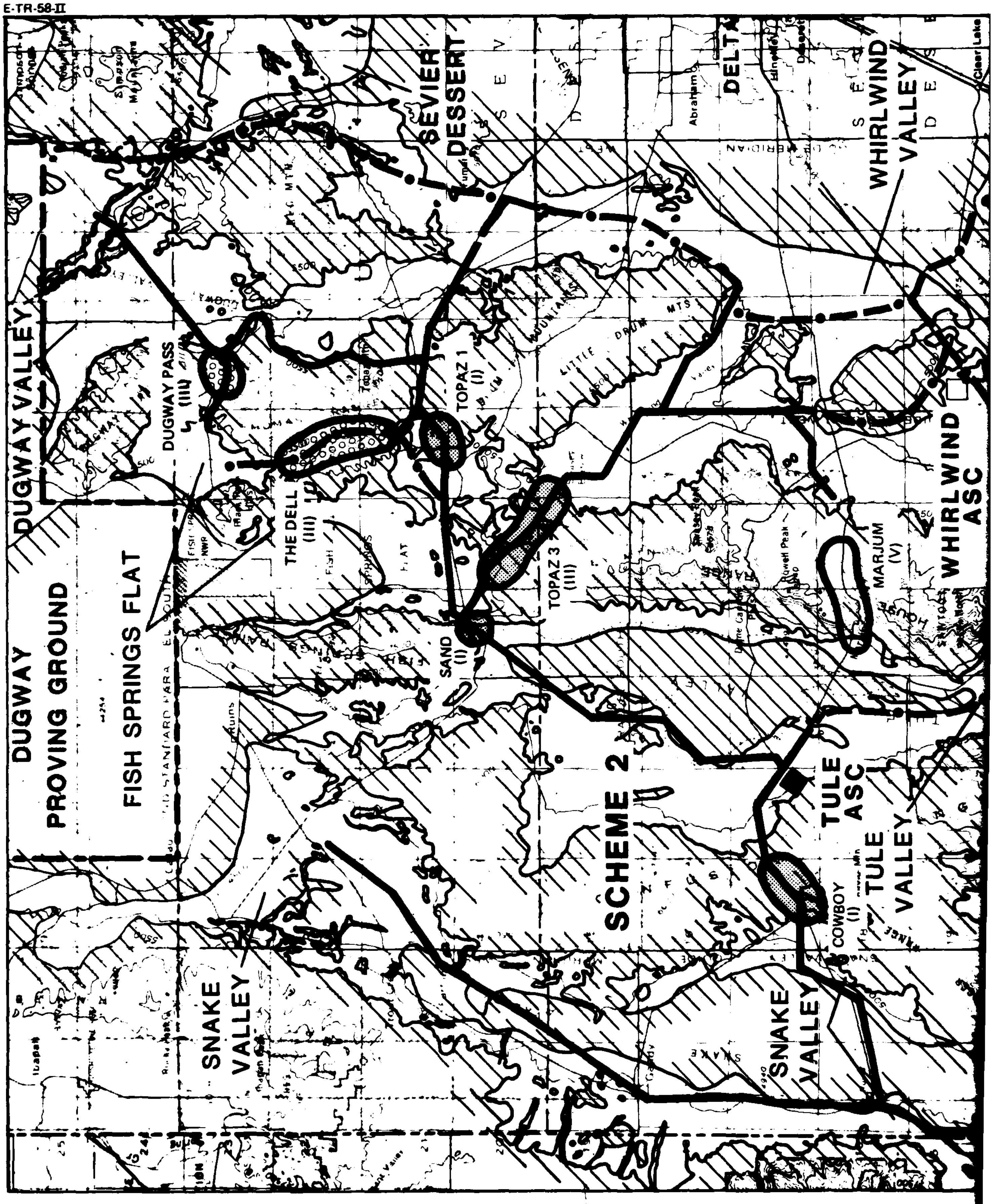
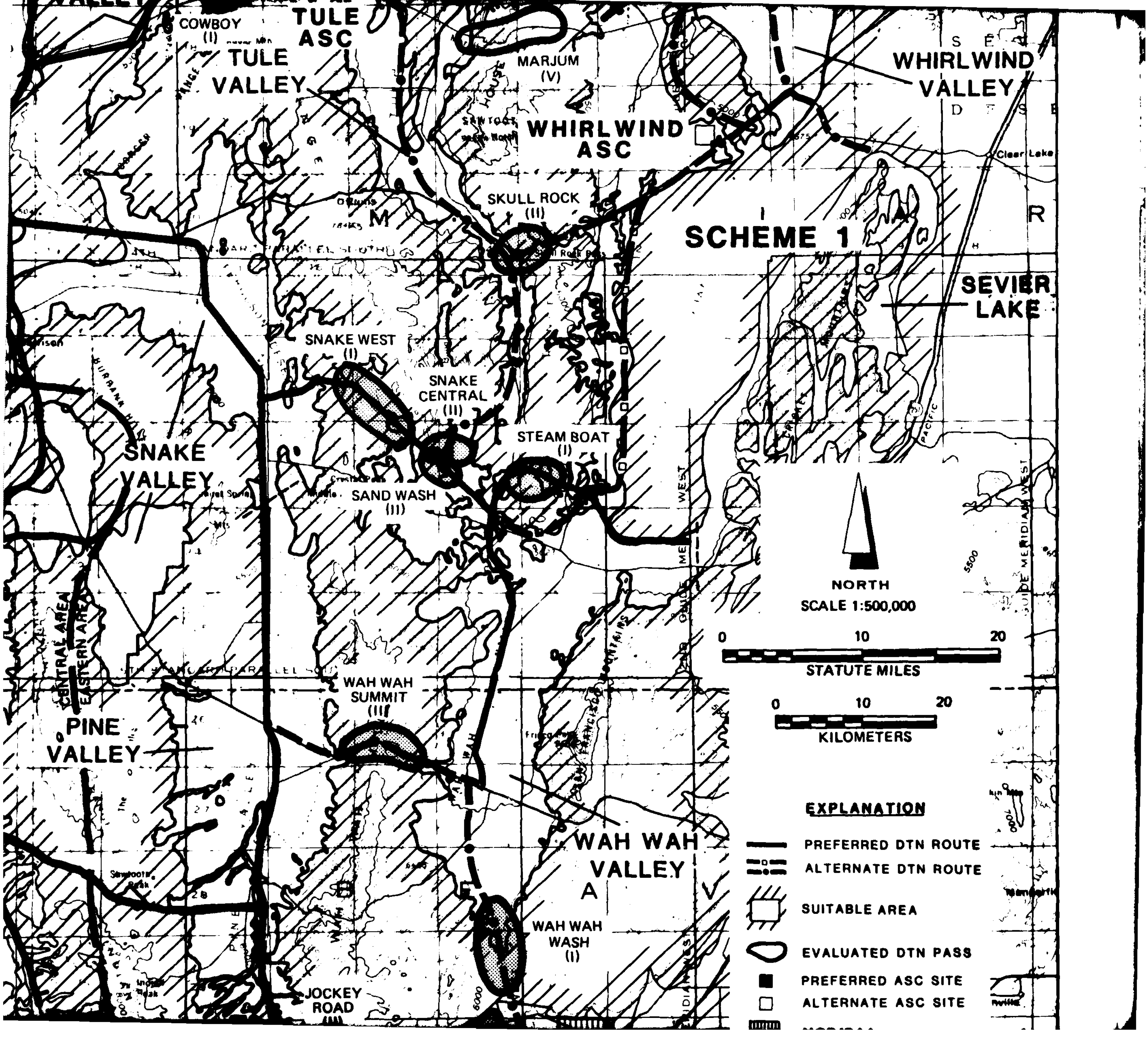
DTN ROUTE COMPARISON, EASTERN AREA

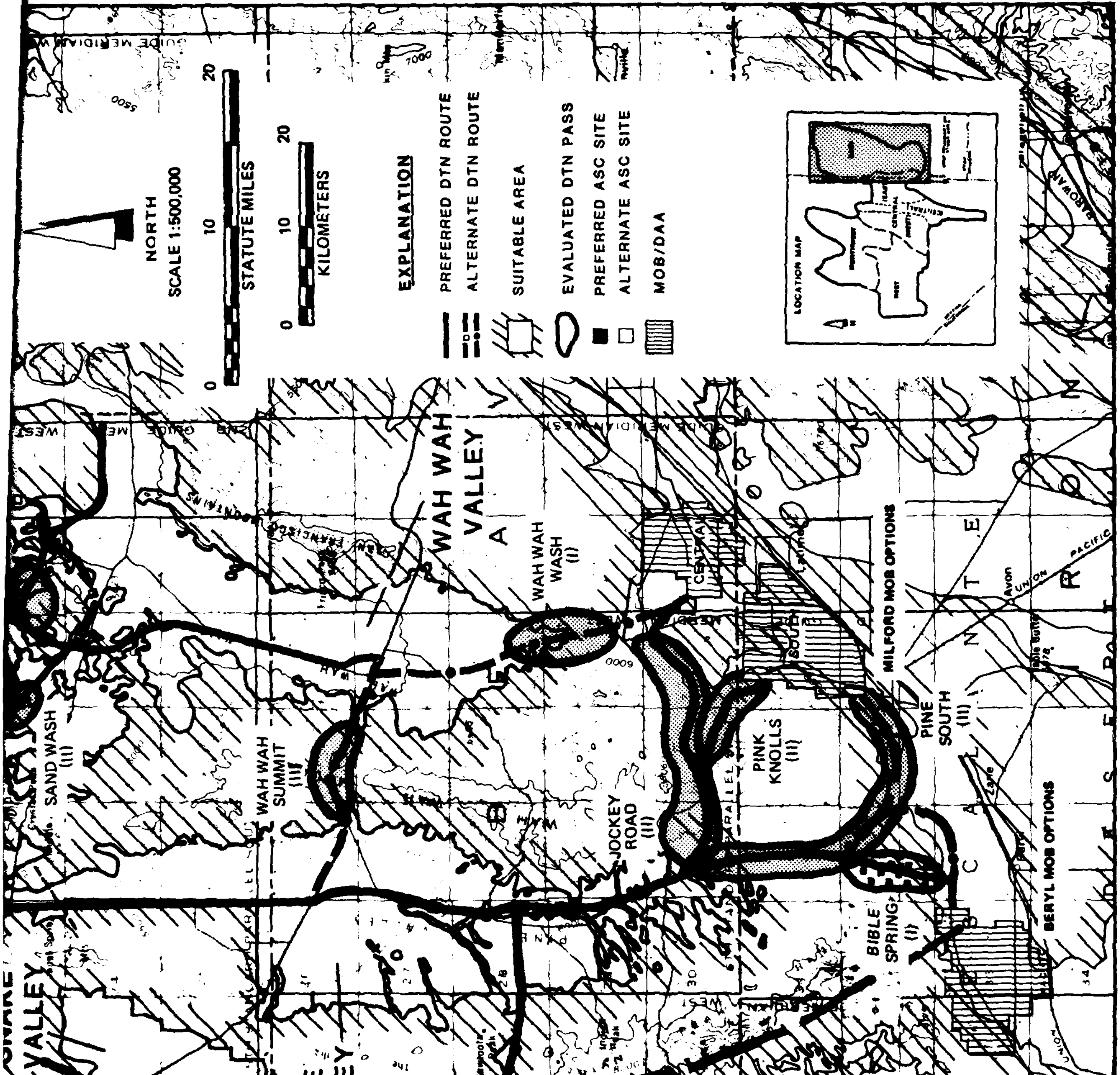
DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

30 NOV 81 TABLE 6-1


DUGWAY
PROVING GROUND
FISH SPRINGS FLAT
DUGWAY VALLEY
DUGWAY PASS
(III)
THE DELL
(III)
TOPAZ 1
(I)
SAND
(I)
TOPAZ 3
(III)
SCHEME 2
SEVIER
DESSERT
DELTA
WHIRLWIND
VALLEY
WHIRLWIND
ASC
MARJUM
(V)
TULE
ASC
TULE
VALLEY
COWBOY
(I)
SNAKE
VALLEY
SNAKE
VALLEY
LITTLE DRUM MTS



COWBOY (I)
TULE ASC
TULE VALLEY
MARJUM (V)
WHIRLWIND ASC
WHIRLWIND VALLEY
SKULL ROCK (II)
SCHEME 1
SEVIER LAKE
SNAKE WEST (I)
SNAKE CENTRAL (II)
STEAM BOAT (I)
SAND WASH (III)
SNAKE VALLEY
CENTRAL AREA
EASTERN AREA
PINE VALLEY
WAH WAH SUMMIT (III)
WAH WAH VALLEY
WAH WAH WASH (I)
JOCKEY ROAD
NORTH
SCALE 1:500,000
0
10
20
STATUTE MILES
0
10
20
KILOMETERS
EXPLANATION
PREFERRED DTN ROUTE
ALTERNATE DTN ROUTE
SUITABLE AREA
EVALUATED DTN PASS
PREFERRED ASC SITE
ALTERNATE ASC SITE



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EASTERN AREA
ROUTE, PASS, AND SITE EVALUATION
BERYL/MILFORD MOB

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

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FIGURE 6-7

6.2.1 DTN and ASC in Eastern Area, Utah

The concerns in determining the optimum DTN routing in the Eastern Area for a Utah MOB are the same as those discussed in Section 6.1.8. For a Coyote Spring MOB, it was concluded that the Scheme 2 approach using Cowboy Pass as access to the northern valleys from Snake Valley with a Tule ASC was the optimum route selection. Two additional studies were performed to integrate the Scheme 1 and 2 route selections with the route alternative from the Milford MOB options: 1) MMC study, dated 30 March 1981, to evaluate seven alternate routings between Milford South MOB and the DDA; and 2) MMC study, dated 20 May 1981, to evaluate six alternative regional routings in the eastern area from Milford South MOB and one routing from Milford Central with the ASC site either at Whirlwind or Tule valleys. In this latter study, three of the alternate routings used Wah Wah Wash as the entrance into the DDA (Wah Wah Valley).

An Ertec study (1981b) indicated that the Wah Wah Wash route entering Wah Wah Valley from the south could interfere with future rail and vehicular traffic from the proposed alunite mine also located in the southern portion of Wah Wah Valley. Likewise, the western exit from Wah Wah Valley through Wah Wah Summit was found to have excessive grade and would require significant cost to construct (i.e., earthwork to lower the grade and widen the road). The Wah Wah Valley issues of crossings Wah Wah Summit and higher traffic flow generated by proximity to the mining interests (i.e. Getty Oil molybdenum

mine, Alumet Co. alunite mine) were contrasted against the multiple environmental considerations in Pine Valley. The most significant concern was that of the eight prairie dog colonies. The prairie dog is on the federal list of the threatened and endangered species. To avoid their colonies a standoff from three quarters to one mile (1.2 to 1.6 km) was applied to the DTN route in the southern foothills of Pine Valley. Although the Pine Valley environmental considerations represents a focal point of concern as a whole, the individual concerns were deemed manageable and were not impacted by the DTN after the route mitigations. Without the environmental issues the Pine Valley DTN provides the least geotechnical and engineering problems. Based on these studies, alternate DTN routing from the Milford MOB through southern Wah Wah Valley were rejected and will not be discussed further in this report.

The Ertec and MMC studies of alternate routes through Pine Valley from the Milford South MOB include the following.

Option	Pass Access into Pine Valley	Pass Exit from Pine Valley used for Eastward Connection
1	Pine south using Pine Valley Road	Wah Wah Summit using Highway 21
2	Pine south using Pine Valley Road*	Snake Pass using Snake Valley Road
3	Pink Knolls using Fischers Wash Road*	Wah Wah Summit using Highway 21
4	Pink Knolls using Fischers Wash Road*	Snake Pass using Snake Valley Road

(Note: * evaluated by both MMC and Ertec)

All of these options used Cowboy Spring Pass (II) as the western access to the Central Area (east). Option 2 assumed a southern DTN exit from a Milford South MOB and is preferred over Option 4 based on lower grades (Table 6-2) and elevations. Option 4 became preferred when the base comprehensive planner relocated the DAA, and thus the DTN exit point, out of the Milford South MOB along Fischers Wash Road to the northwest. The MMC study concluded Fischers Wash Road provides lower construction cost when used with Snake Pass and represents the shortest route to both the north and the central portions of the Eastern Area. This route assumes that the impact to the endangered Utah prairie dogs will be mitigated in the final detailed routing. The comparison of these options is summarized in Table 6-3, page 1 of 2.

The MMC study (1981b) of DTN alternatives in the Eastern Area along with ASC consideration are as follows.

Option	Pass Access to Pine Valley	ASC
1	Pine south using Pine Valley Road	Whirlwind Valley
2	Pine south using Pine Valley Road	Tule Valley
3	Jockey Road using Jockey Road	Tule Valley

All these options used Snake Pass to provide eastward access within the Eastern Area and Cowboy Spring Pass as the access to the Central Area. The comparisons of the alternatives are summarized in Table 6-3, page 2 of 2. This study concluded that the DTN will be more cost effective with the ASC at Tule, and Option 3 which uses Jockey Road is less costly.

Option 2 Route	Option 4 Route
Pine South using Pine Valley Road (Snake Pass instead of Wah Wah Summit)	Pink Knolls using Fisher Wash Road (Snake Pass instead of Wah Wah Summit)
ADVANTAGES	
1. Two percent grade	1. Three-four percent grade
2. Easy grading, minimum rock	2. Easy grading, minimum rock
3. Less primary road length than Wah Wah Wash	3. Less primary and total road length than Pine South (2.5 miles)
4. Minimal additional road length to OBTS (3 miles)	4. Shortest length of primary road
5. Uses lowest elevation passes gradual climb from 5300 feet to 6280 feet in Pine Valley	
DISADVANTAGES	
1. Passes through prairie dog town (mitigated by 1-mile buffer)	1. Passes through prairie dog town (mitigated by 1-mile buffer)
2. Route through private property	2. Longer total road length than Wah Wah Wash (+14.5 miles)
3. Longest total road length Pink Knolls (+2.5 miles) and Wah Wah Wash (+17 miles)	3. Highest elevation of the passes-gradual climb from 5400 feet to 6750 feet in the east of Pine Valley
	4. Longest additional road to either OBTS option-north (14.5 miles) or south (8 miles)

REFERENCE:

ERTEC, 1981b

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DTN ROUTE COMPARISON, MILFORD SOUTH MOB

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

30 NOV 81 TABLE 6-2

DTN BETWEEN MILFORD SOUTH MOB AND DDA

ROUTE OPTION / ROAD CLASS	OPTION 1 PINE VALLEY (PINE VALLEY ROAD) WAH WAH SUMMIT PASS		OPTION 2 PINE VALLEY (PINE VALLEY ROAD) SNAKE PASS ROAD		OPTION 3 PINE VALLEY (PINK KNOLLS) WAH WAH SUMMIT PASS		OPTION 4 PINE VALLEY (PINK KNOLLS) SNAKE PASS ROAD	
	RD MILES	COST	RD MILES	COST	RD MILES	COST	RD MILES	COST
A	62.0	76,880	91.5	113,460	60.0	74,400	89.5	110,980
B	42.5	48,832	19.0	21,831	42.5	48,832	19.0	21,831
C	28.5	30,210	–	–	28.5	30,210	–	–
D	–	–	15.5	16,074	–	–	15.5	16,074
E	–	–	–	–	–	–	–	–
TOTAL ROAD LENGTH (MILES)	133.0	–	126.0	–	131.0	–	124.0	–
ADD. COSTS FOR ROUTE THROUGH WAH WAH SUMMIT	–	8,000	–	–	–	8,000	–	–
TOTAL CONSTRUCTION COST (X $1,000)	–	163,922	–	151,365	–	161,442	–	148,885
OPERATING COSTS (X $1,000)	41,600		43,200		40,000		41,600	
TOTAL COST (X $1,000)	205,522		194,565		201,442		190,485	
TO WESTERN CLUSTERS (MILES)	40		40		38		38	

NOTE:
CLASS A ROAD SERVES 50 TO 200 CLUSTERS
CLASS B ROAD SERVES 20 TO 49 CLUSTERS
CLASS C ROAD SERVES 6 TO 19 CLUSTERS
CLASS D ROAD SERVES 3 TO 5 CLUSTERS
CLASS E ROAD SERVES 1 TO 2 CLUSTERS

REFERENCE:
MMC, 1981b

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COST COMPARISON

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

30 NOV 81 TABLE 6-3 1of 2

DTN IN EASTERN AREA WITH ASC CONSIDERATION

ROUTE OPTION / ROAD CLASS	OPTION 1 PINE VALLEY (PINE VALLEY ROAD) WHIRLWIND ASC (1A-W)		OPTION 2 PINE VALLEY (PINE VALLEY ROAD) TULE ASC (1A-T)		OPTION 3 PINE VALLE' (JOCKEY RD TULE ASC (1D-T)	
	RD MILES	COST	RD MILES	COST	RD MILES	COST
A	43	53,320	43	53,320	40	49,600
B	47	54,003	45	51,705	45	51,705
C	33	34,980	65	68,900	65	68,900
D	141	146,217	91	94,367	91	94,367
E	54	54,000	37	37,000	37	37,000
TOTAL ROAD LENGTH (MILES)	318	–	281	–	278	–
ADD. COSTS FOR ROUTE THROUGH WAH WAH SUMMIT	–	–	–	–	–	–
TOTAL CONSTRUCTION COST (X $1,000)	342,520		305,292		302,572	
OPERATING COSTS (X $1,000)	53,544		55,158		52,758	
TOTAL COST (X $1,000)	396,064		360,450		355,330	
TO WESTERN CLUSTERS (MILES)	43		43		40	

NOTE:
CLASS A ROAD SERVES 50 TO 200 CLUSTERS
CLASS B ROAD SERVES 20 TO 49 CLUSTERS
CLASS C ROAD SERVES 6 TO 19 CLUSTERS
CLASS D ROAD SERVES 3 TO 5 CLUSTERS
CLASS E ROAD SERVES 1 TO 2 CLUSTERS

REFERENCE:
MMC, 1981b

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COST COMPARISON

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

30 NOV 81 TABLE 6-3 2 of 2

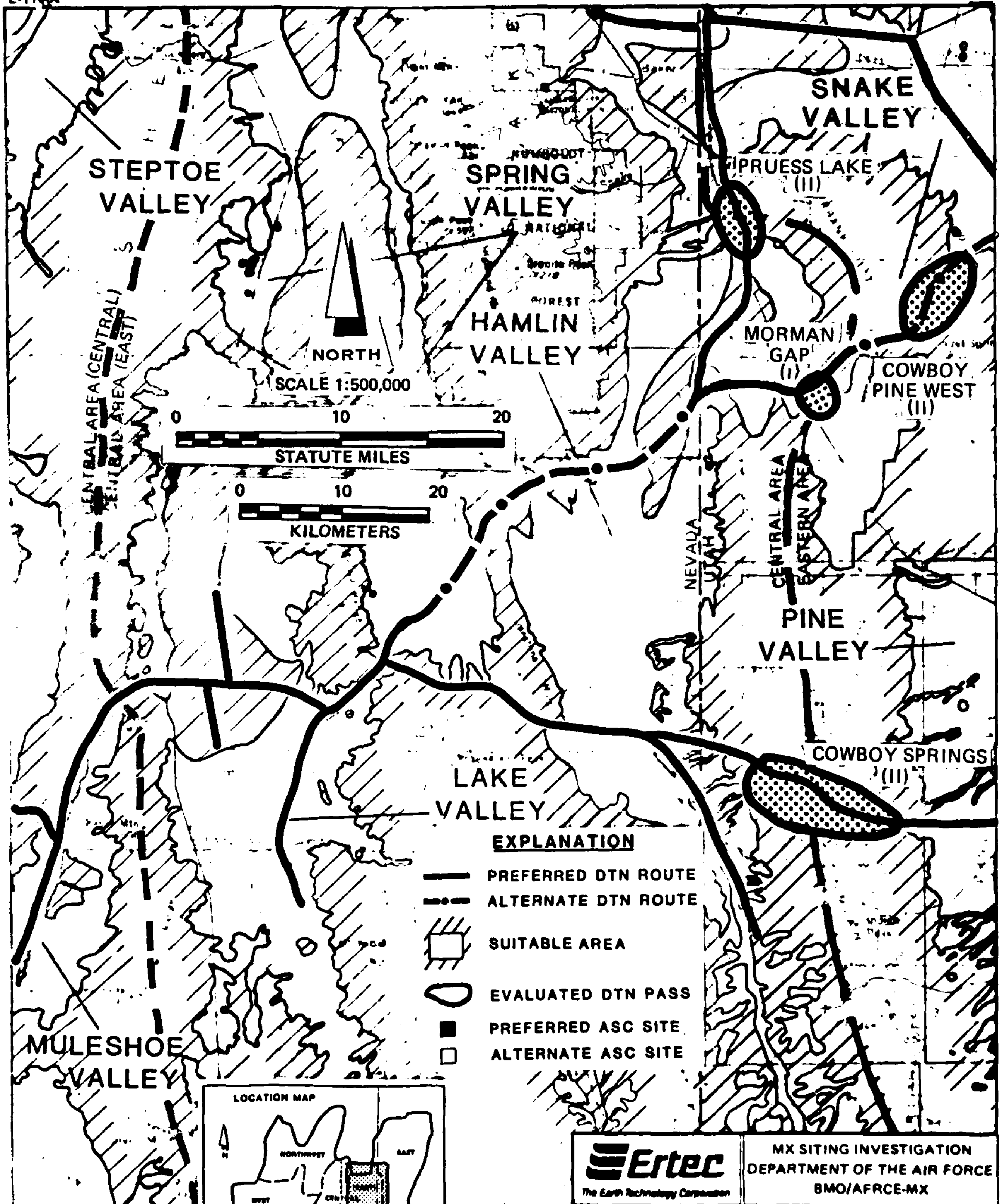
Combining the findings from these studies and other considerations, the DTN layout using the Tule ASC, Snake Pass, and either Fischer's Wash Road for Milford South MOB or Jockey Road for Milford Central were determined to be the optimum routes.

When the MOB is at Beryl, the DTN and ASC considerations will be much the same as those from the Milford South MOB except that the entrance into Pine Valley will go through Bible Spring Pass (I) into Pine Valley Road.

Independent of which Utah MOB is selected, one other DTN route evaluation within the Eastern Area was performed. This evaluation addressed the access from the southern portion of Fish Springs Flat to the northern portion. Initially, the pass used was the Dell (III) which is on the eastern side of the valley. After a field reconnaissance trip to the area, the DTN working group determined that the optimal route was by way of the Dugway Pass (III). Although both passes were ranked the same, Dugway Pass resulted in a shorter length of DTN.

6.2.2 DTN From Eastern Area, Utah, to Central Area, Nevada

Martin Marrietta Corporation presented a study (Figure 6-8) which compared the use of either Cowboy Spring Pass or Cowboy Pine West/Morman Gap Pass as access to the Central Area from the Eastern Area with a Milford or Beryl MOB. The study concluded that it is more cost effective to use Cowboy Spring Pass as this connection because it provides a much shorter route into the Central Area from the Utah MOB options. Using Cowboy



EASTERN PORTION OF CENTRAL AREA ROUTE, PASS, AND SITE EVALUATION BERYL/MILFORD MOBs

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

30 NOV 81

FIGURE 6-8

Pine West and Morman Gap Pass would reduce construction costs but would incur higher operating costs and require longer transportation time.

6.2.3 DTN and ASC in Central, Western, and Northwestern Areas, Nevada

Except for Hamlin Valley, the DTN in the Central, Western, and Northwestern areas for the Utah MOB options will be the same as that presented earlier in Section 6.1 for a MOB in Coyote Spring Valley. One additional improvement that could be implemented would be the use of the combinations of Silver King Pass (between Cave and White River valleys) and Coal Northeast Pass (between White River and Coal valleys) in lieu of Burnt Peak and Timber Mountain passes. The former passes represent the most direct route (for the Beryl/Milford MOB options) from the central portion to the western portion of the Central Area.

The ASC locations will be unaffected by the Beryl/Milford MOB options (Figure 6-1).

7.0 CONCLUSIONS

By applying the methodology and criteria for the DTN routing and ASC siting as previously described and integrating the results of the discussions and studies performed by the DTN work group members, the optimal routing of DTN and the preferred siting of an ASC for each MOB option were determined. The preferred DTN route and the summary of the pertinent data are presented in the following sections.

7.1 PREFERRED DTN ROUTE

The preferred DTN is presented in Drawings 7-1 and 7-2. The detailed DTN routes have also been shown on shelter layout maps of 1:62,500 scale on a valley-by-valley basis. These maps are be presented in Volume I, Part II - Siting Summary Report. For the Coyote Spring MOB, Nevada, (Drawing 7-1), the DTN enters Delamar Valley in the Central Area through Delamar Pass. Exiting from White River Valley (Central Area) the DTN uses Well Station Summit to connect with Railroad Valley (central) of the Northwestern Area. Penoyer Northwest Pass is then used to connect Penoyer Valley (Central Area) and Railroad Valley (south) of the Western Area. The Central Area is connected to the Eastern Area by using Pruess Lake and Morman Gap passes (Hamlin to Snake valleys).

For the Milford South and Milford Central MOB options, Utah, the DTN enters Pine Valley through Pink Knoll and Jockey Road passes, respectively. Bible Spring and Pine South passes

provide access to Pine Valley for Beryl MOB. The DTN traverses Pine Valley into Snake Valley. Cowboy Pass provides access to the northeastern valleys and Snake West and Sand Wash passes are used to enter the southeastern valleys. All Milford and Beryl options use Cowboy Spring Pass to Hamlin Valley, connecting the Eastern and Central areas. West of Hamlin Valley, the DTN for the Central, Western, and Northwestern areas is exactly the same as that for the Coyote Spring MOB. Table 7-1 summarizes the pertinent data of road lengths and number of highway crossings and passes used for the DTN schemes.

7.2 PREFERRED ASC

The preferred ASC sites are also shown in the DTN drawings (Drawing 7-1 and 7-2). They are Muleshoe, Stone Cabin, and Newark ASCs, Nevada, and Tule ASC, Utah. Each ASC is sited at the same location for all OB options. Their detailed locations are shown in Figures 7-1 through 7-4. The pertinent descriptions for the ASCs are presented in Table 7-2 and the numbers of clusters serviced by the ASCs in Table 7-3.

7.3 SERVICE ROADS

Detailed studies of a service road network were not attempted. A limited study to determine a service road connection between Delta, Utah, and the Tule ASC was performed. It was determined that use of the old U.S. Highway 6, 50 through Marjum Pass was preferred.

MOB AT	ROAD LENGTH (MILES)			NO. OF HIGHWAY CROSSINGS	NUMBER OF PASSES			
	TOTAL	CO-EXISTING	NEW		TOTAL	RANKING		
						I	II	III
COYOTE, NEVADA	1423	250	1173	8	34	20	11	3
BERYL, UTAH	1435	242	1193	8	34	20	12	2
MILFORD SOUTH, UTAH	1431	242	1189	8	33	19	12	2
MILFORD CENTRAL, UTAH	1437	242	1195	8	34	19	13	2

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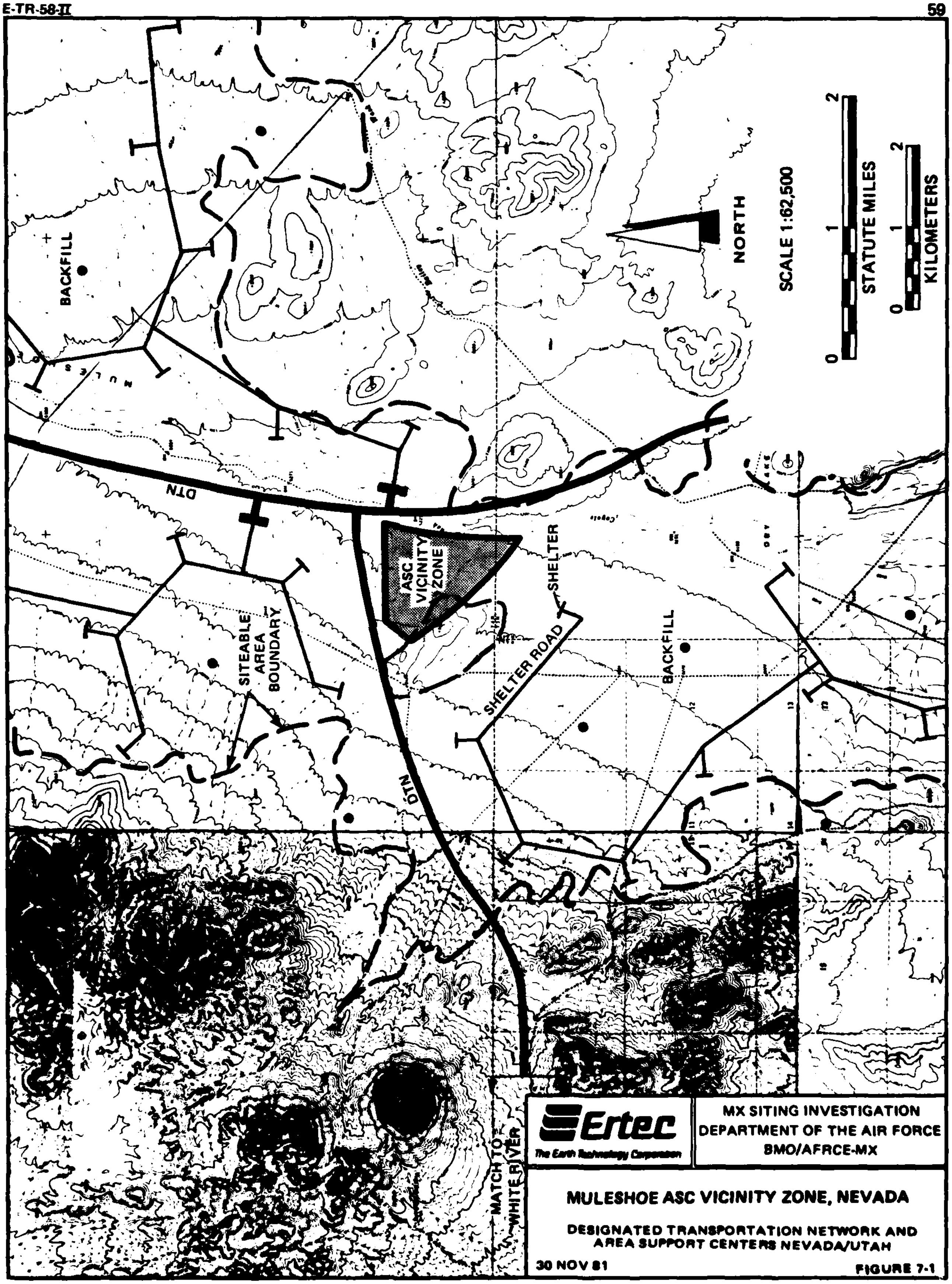
SUMMARY OF DTN DATA FOR MOB OPTIONS

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

30 NOV 81 TABLE 7-1



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MULESHOE ASC VICINITY ZONE, NEVADA

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

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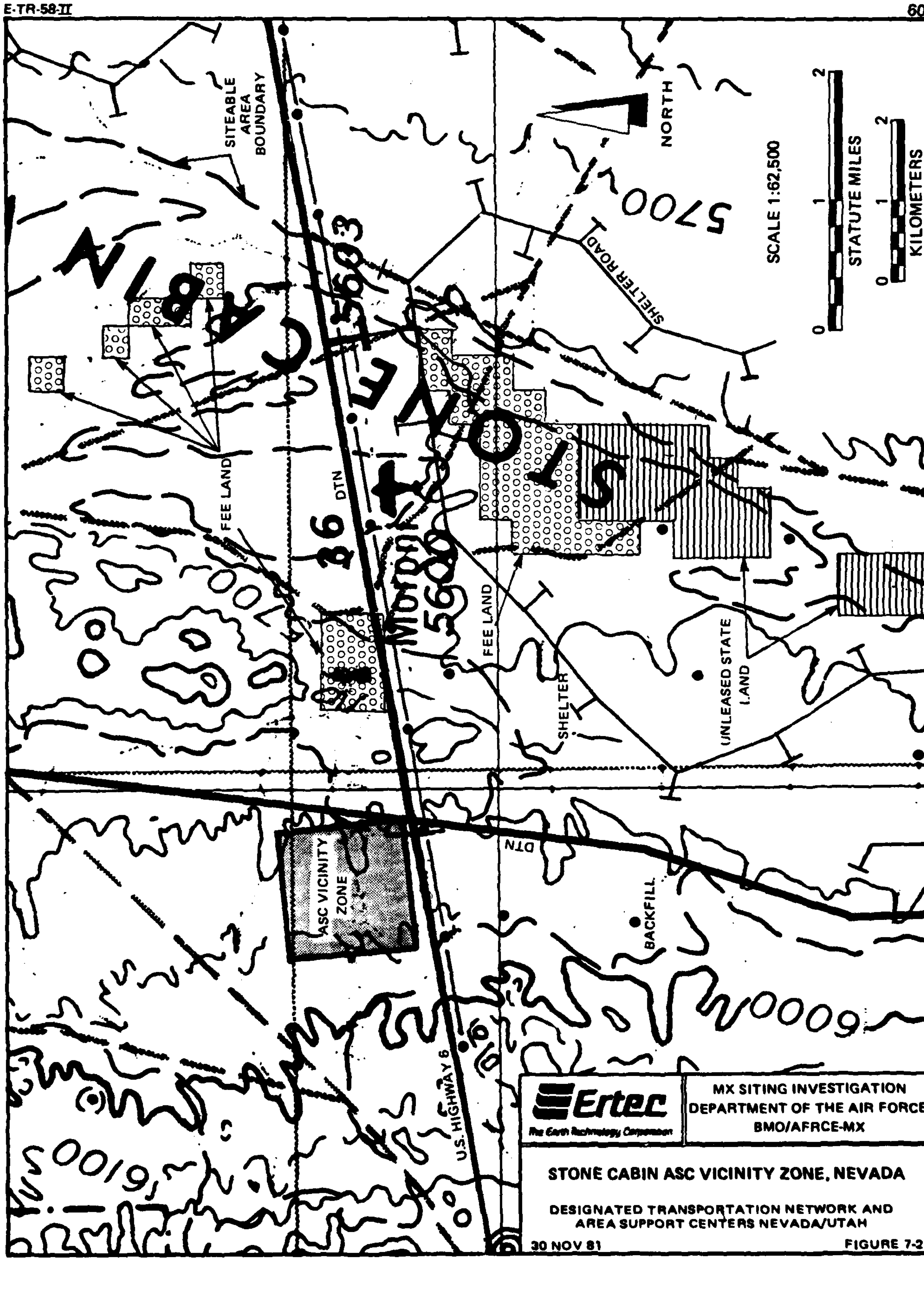
FIGURE 7-1



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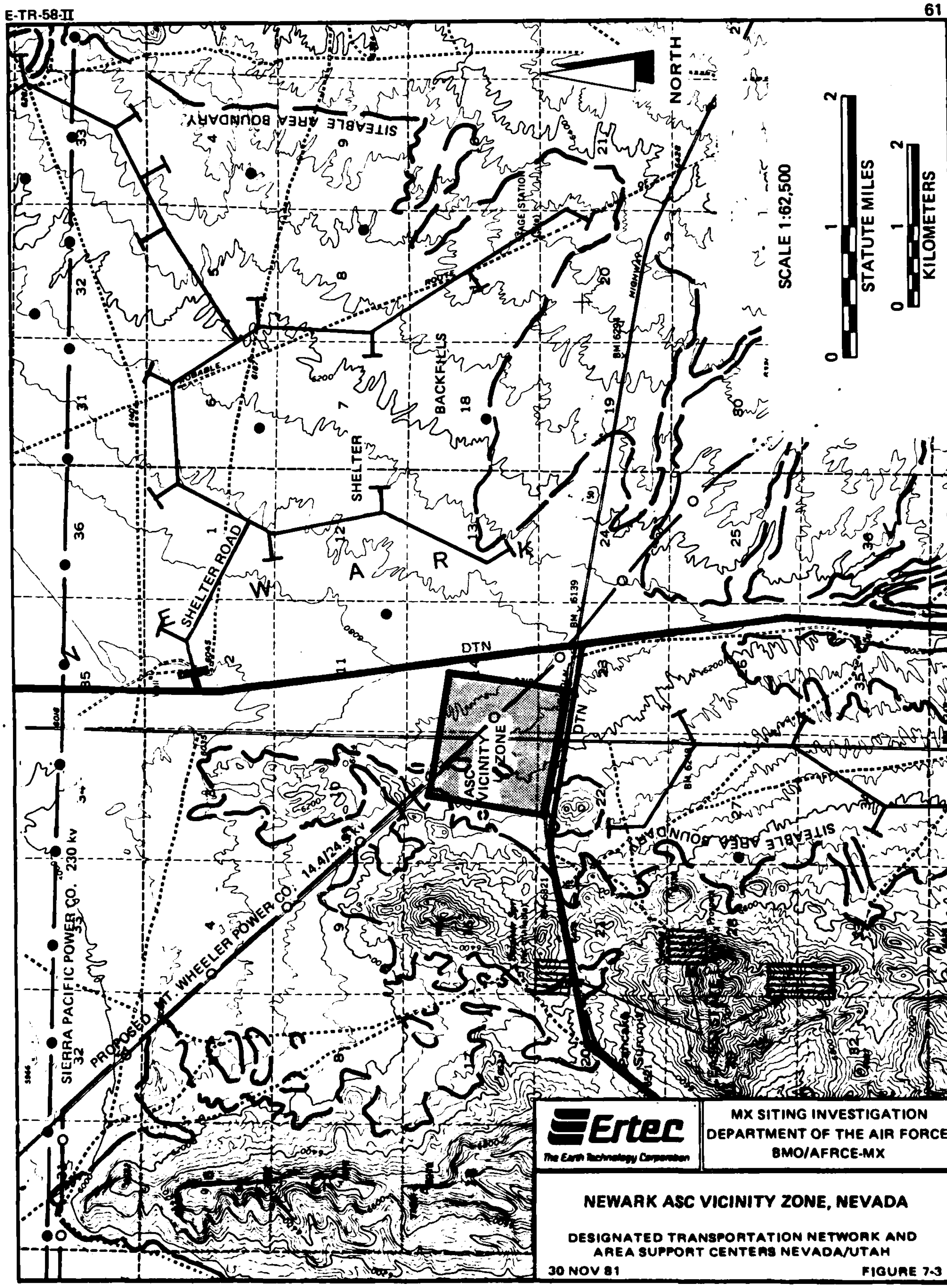
STONE CABIN ASC VICINITY ZONE, NEVADA

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

30 NOV 81 FIGURE 7-2



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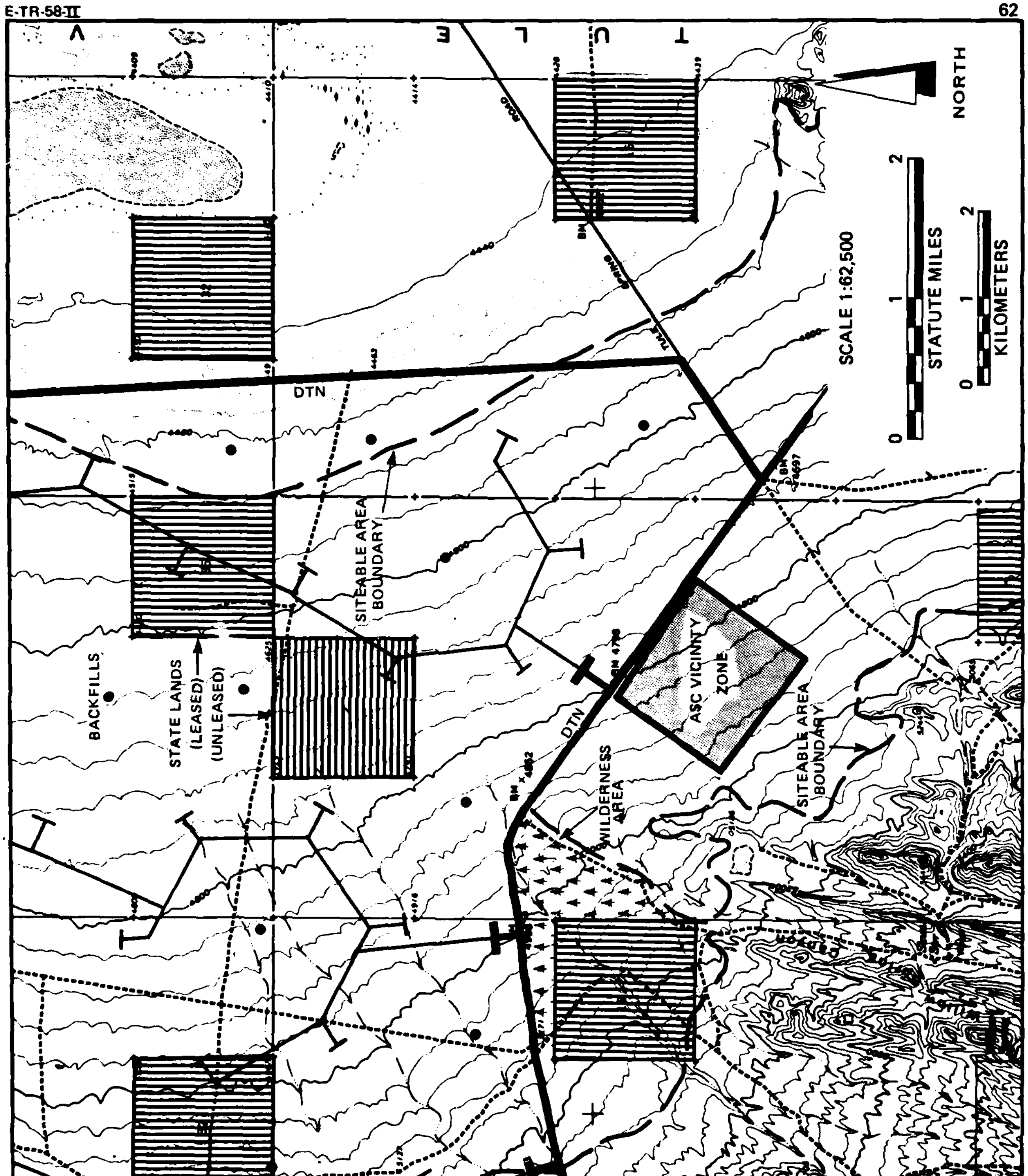
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

NEWARK ASC VICINITY ZONE, NEVADA

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

30 NOV 81 FIGURE 7-3



Ertec
The Earth Technology Corporation

MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

TULE ASC VICINITY ZONE, UTAH

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

30 NOV 81 FIGURE 7-4

ASC	ROCK DEPTH	WATER DEPTH	TERRAIN		FLOOD POTENTIAL	OTHER HAZARDS LIKE FAULTS, DUNES, ETC.	SURFICIAL GEOLOGY
			SLOPE	INCISION DEPTH			
1. MULESHOE, NEVADA	> 50'	>150'	3%	≈ 3'	LOW	NONE	Mostly intermediate alluvial fan; coarse-grained granular soils; predominantly silty and gravelly sands with some clayey and sandy gravels
2. STONE CABIN, NEVADA	> 50'	>150'	3%	≈ 3'	LOW	FAULT IN NW	Mostly intermediate alluvial fan; coarse-grained granular soils; predominantly silty and gravelly sands with some clayey and sandy gravels
3. NEWARK, NEVADA	> 50' *	>150'	2%	≈ 5'	LOW	NONE	*Small rock outcrops in west side. Depth to rock may be less than 50' near outcrops. Mostly intermediate alluvial fan with some young alluvial fan. Soils are mostly coarse-grained and granular silty and gravelly sand with some clayey and sandy gravels
4. TULE, UTAH	> 50'	>150'	3%	≈ 3'	LOW	NONE	Mostly intermediate alluvial fan with old lacustrine deposits. Coarse-grained granular soils ranging from silty sand to sandy gravels

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ASC VICINITY ZONE GEOTECHNICAL DATA

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

30 NOV 81 TABLE 7-2

UTAH		TOTAL** CLUSTERS IN VALLEY	MULESHOE ASC	STONE CABIN ASC	NEWARK ASC	TULE ASC	OVER-LAP
1. DUGWAY	DW	5	–	–	–	5	–
2. FISH SPRINGS FLAT	FS	2	–	–	–	2	–
3. PINE	PI	5	2	–	–	4	1
4. SEVIER DESERT	SD	2	–	–	–	2	–
5. SEVIER LAKE	SL	1	–	–	–	1	–
6. SNAKE	SV	19	1	–	–	19	1
7. TULE	TL	10	–	–	–	10	–
8. WAH WAH	WA	5	–	–	–	5	–
9. WHIRLWIND	WW	12	–	–	–	12	–
UT SUBTOTAL		61	3	–	–	60	2

NEVADA		TOTAL** CLUSTERS IN VALLEY	MULESHOE ASC	STONE CABIN ASC	NEWARK ASC	TULE ASC	OVER-LAP
1. ANTELOPE	AN	4	–	–	4	–	–
2. BIG SAND SPRINGS	BG	3	–	3	1	–	1
3. BIG SMOKY	BS	10	–	10	–	–	–
4. BUTTE	BV	9	–	–	9	–	–
5. CAVE	CV	3	3	–	–	–	–
6. COAL	CL	6	6	–	–	–	–
7. DELAMAR	DM	3	3	–	–	–	–
8. DRY LAKE	DL	10	10	–	–	–	–
9. GARDEN	GN	6	6	1	–	–	1
10. HAMLIN	HV	10	9	–	–	6	5
11. HOT CREEK	HC	6	–	6	–	–	–
12. JAKES	JV	3	–	–	3	–	–
13. KOBEH	KB	5	–	–	5	–	–
14. LAKE	LV	7	7	–	–	–	–
15. LITTLE SMOKY	LS	4	–	–	4	–	–
16. LONG	LG	4	–	–	4	–	–
17. MONITOR	MV	6	–	2	4	–	–
18. MULESHOE	MS	3	3	–	–	–	–
19. NEWARK	NK	5	–	–	5	–	–
20. PAHROC	PA	3	3	–	–	–	–
21. PENOYER	PN	5	5	5	–	–	5
22. RAILROAD	RR	13	5	10	4	–	6
23. RALSTON	RV	9	–	9	–	–	–
24. REVEILLE	RE	3	–	3	–	–	–
25. SPRING	SP	4	4	–	–	1	1
•26. STEPTOE	SO	2	2	–	2	2	4
27. STONE CABIN	ST	8	–	8	–	–	–
28. WHITE RIVER	WR	12	12	–	4	–	4
NV SUBTOTAL		166	78	57	49	9	27
TOTAL		227	81	57	49	69	29

*STEPTOE VALLEY DELETED FROM FURTHUR STUDIES AS OF SEPTEMBER 1981

**VALLEY CLUSTER COUNT BASED ON 15 MAY 81 REGIONAL LAYOUT MAP

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DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

SUMMARY OF CLUSTER COVERAGE OF PREFERRED ASC SITES

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

30 NOV 81 TABLE 7-3

8.0 REFERENCES CITED

Ertec Western, Inc., 1981a, DTN alternate routing, letter No. F-USAF-81-9908, 3 February 1981.

____________, 1981b, Comparison of DTN route options from the Milford Operational Base-Optional, letter No. F-USAF-81-0188, 9 March 1981.

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____________, 1980a, Preliminary evaluation of designated transportation network, FN-TR-DTN, 6 June 1980.

Henningson, Durham, and Richardson, Inc., 1981b, letter No. MX80-HDRS-NAFB-478, 12 March 1981.

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____________, 1981b, DTN routing study Milford DAA, Tule ASC versus Whirlwind ASC, 20 May 1981.

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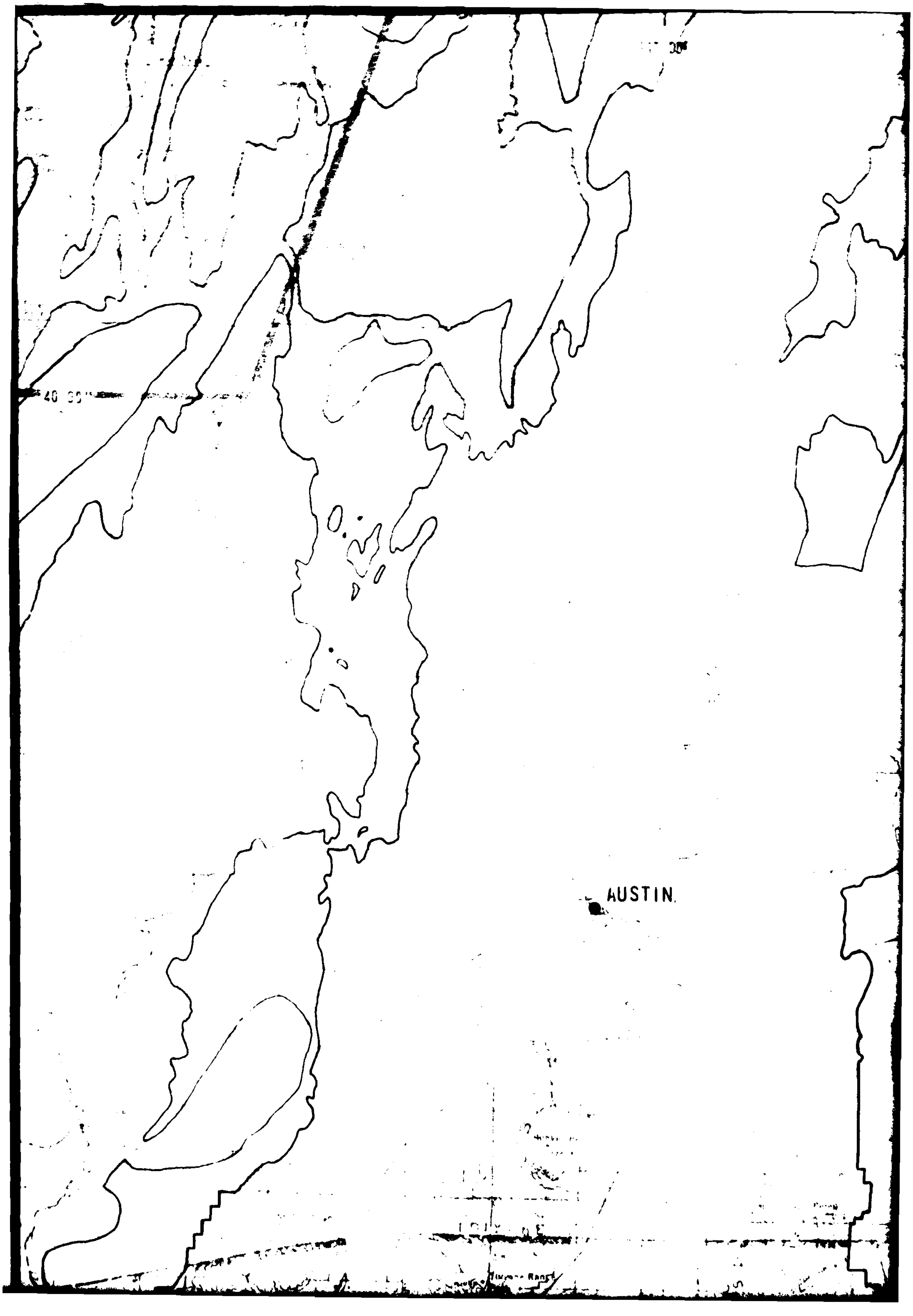
____________, BMO/AFSC, 1980, MX horizontal shelter weapon system baseline configuration, December 1980.

____________, BMO/AFRCE-MX, 1980a, MX site layout requirements for a horizontal shelter with separate transporter and elector launcher system-Nevada/Utah, 6 June 1980.

____________, BMO/AFRCE-MX, 1980, Siting criteria for MX designated deployment area, 10 November 1980.

APPENDIX A

RAILROAD PASS LOCATION, NEVADA-UTAH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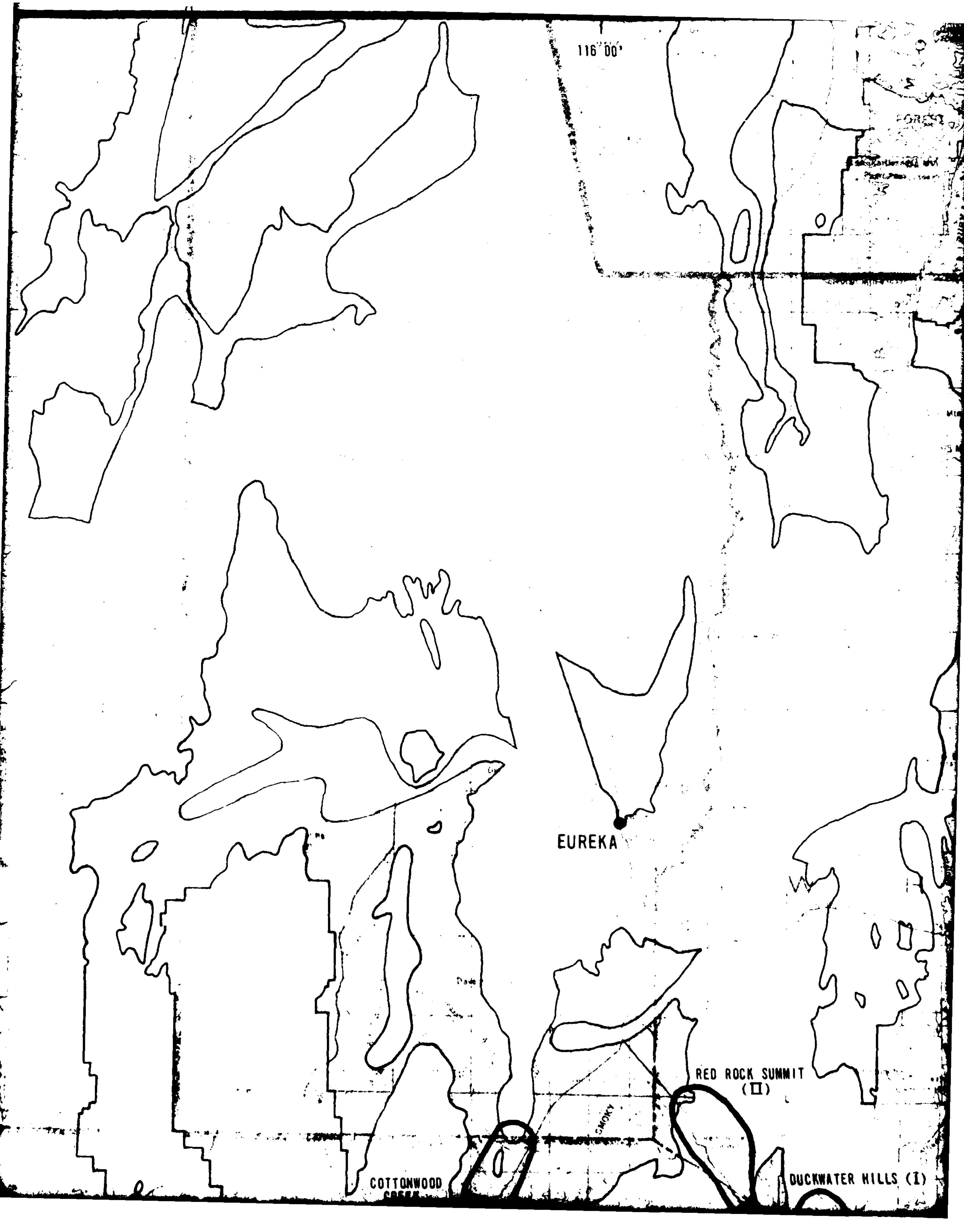
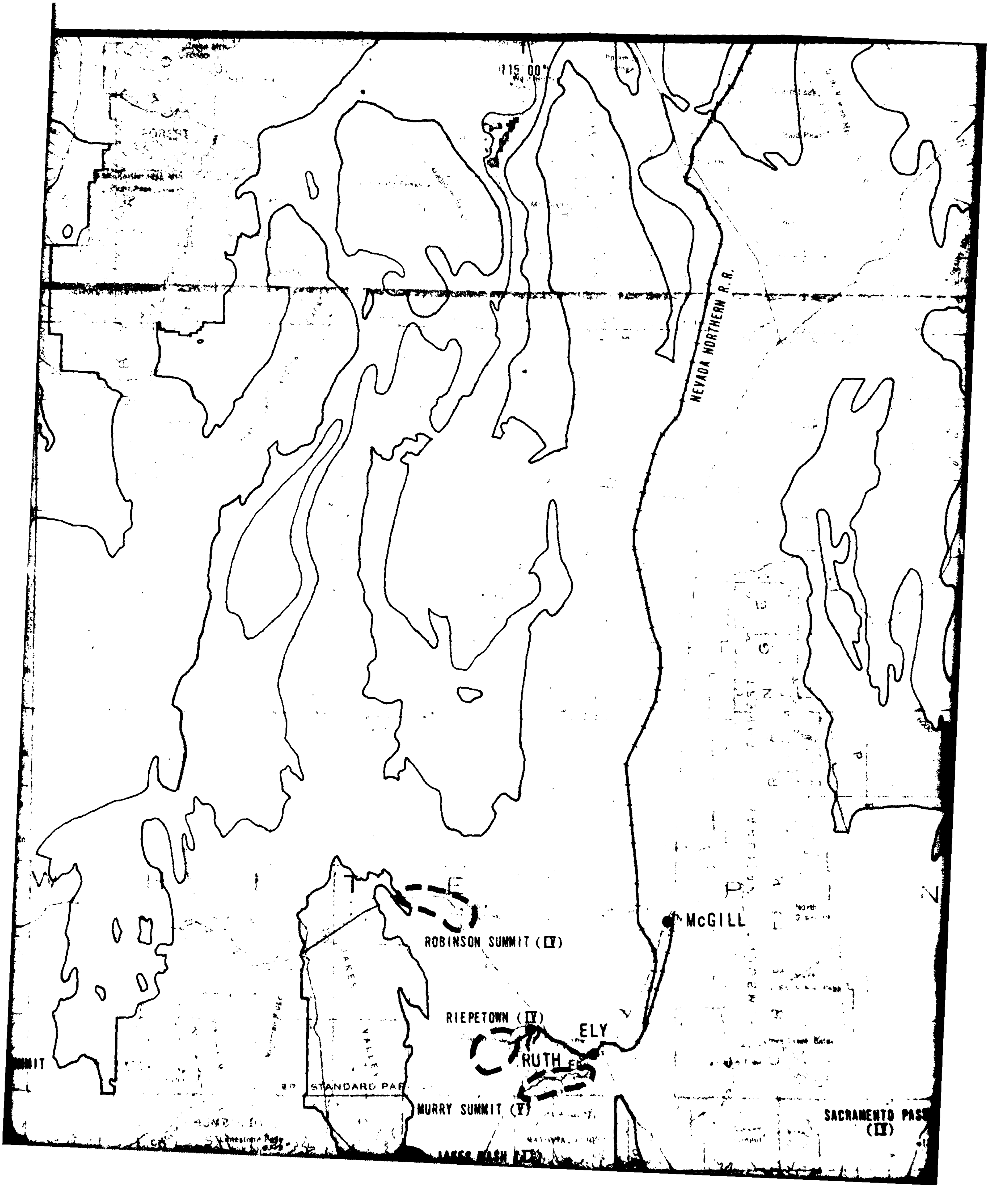
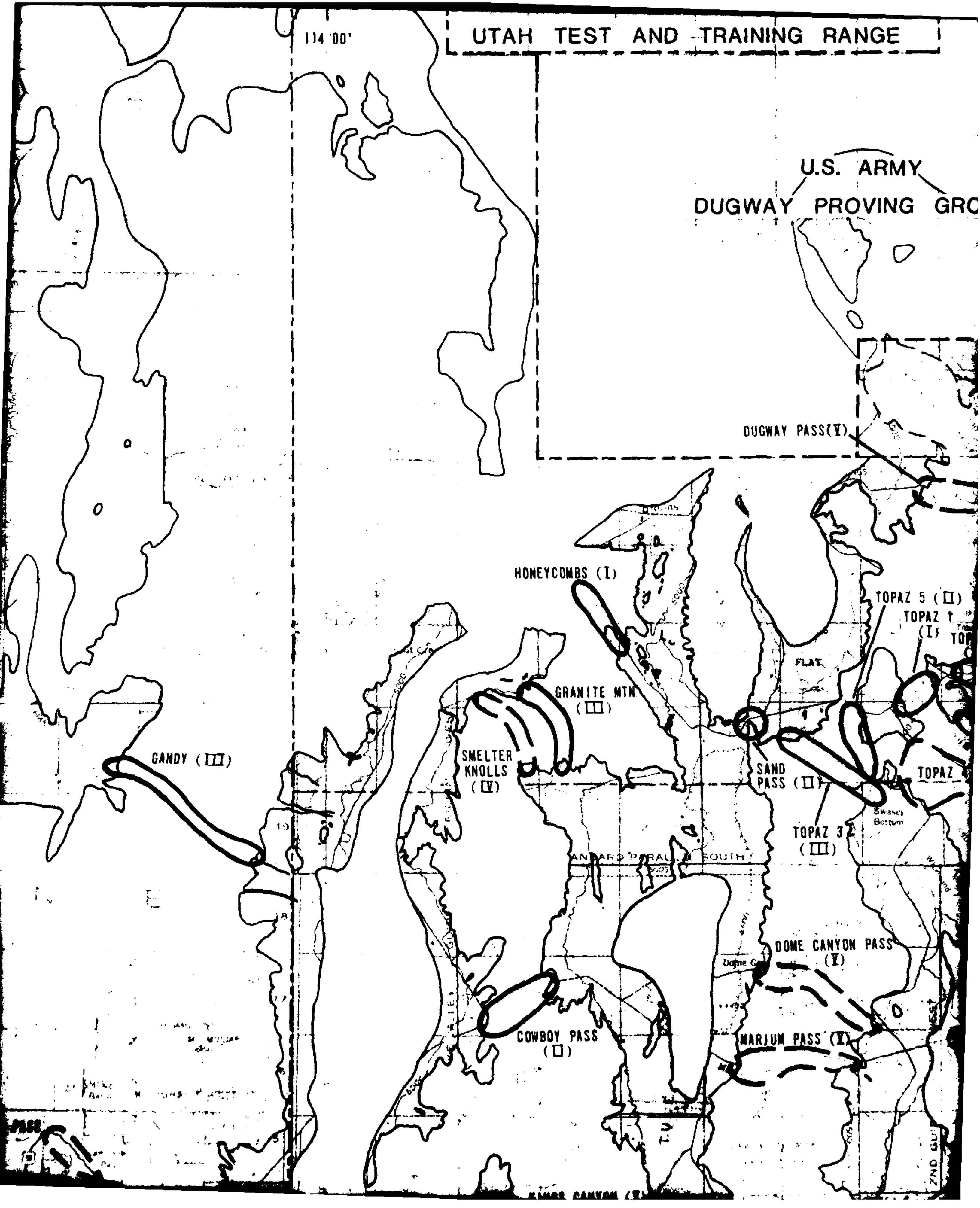
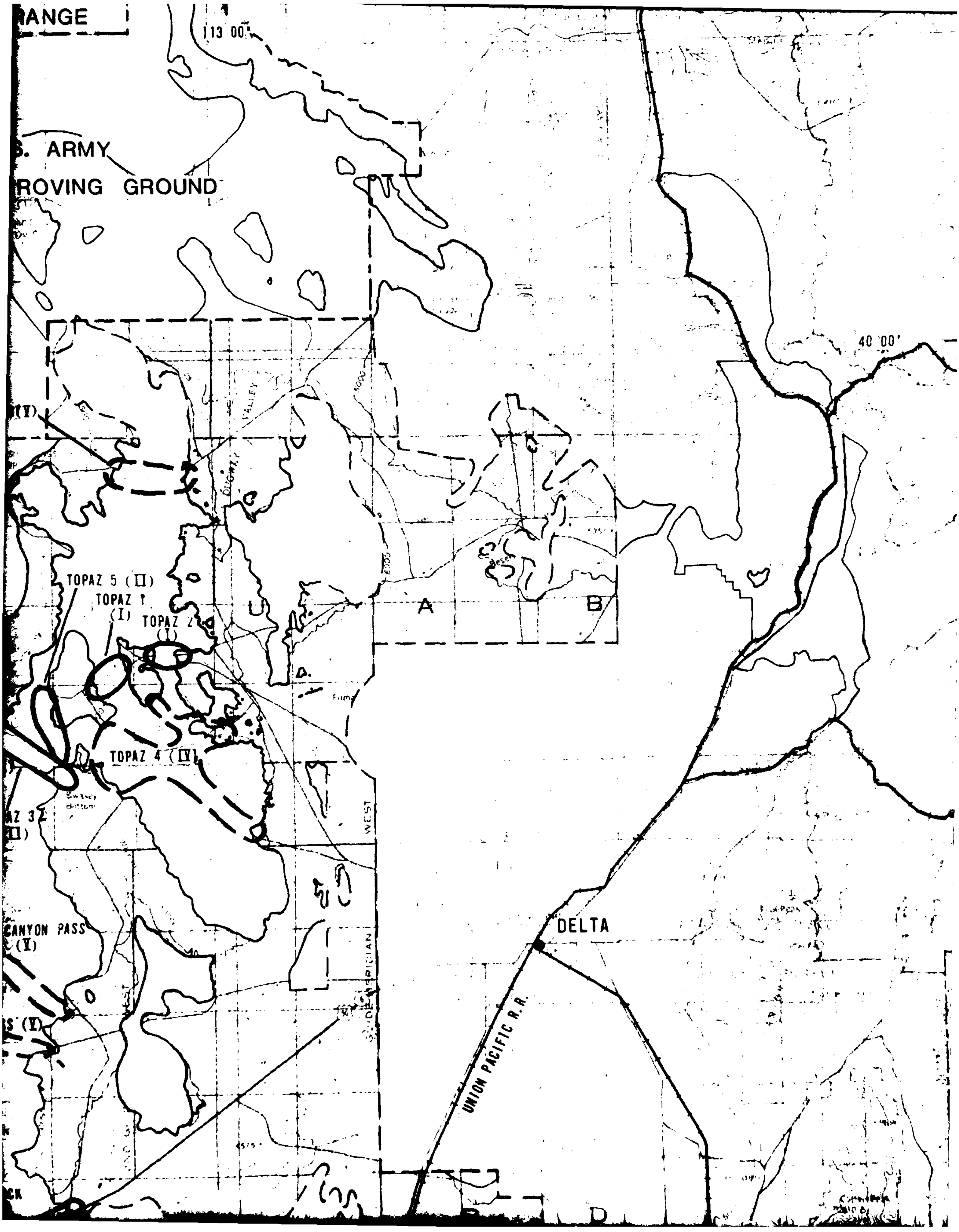


116° 00'
EUREKA
RED ROCK SUMMIT
(II)
COTTONWOOD
DUCKWATER HILLS (I)

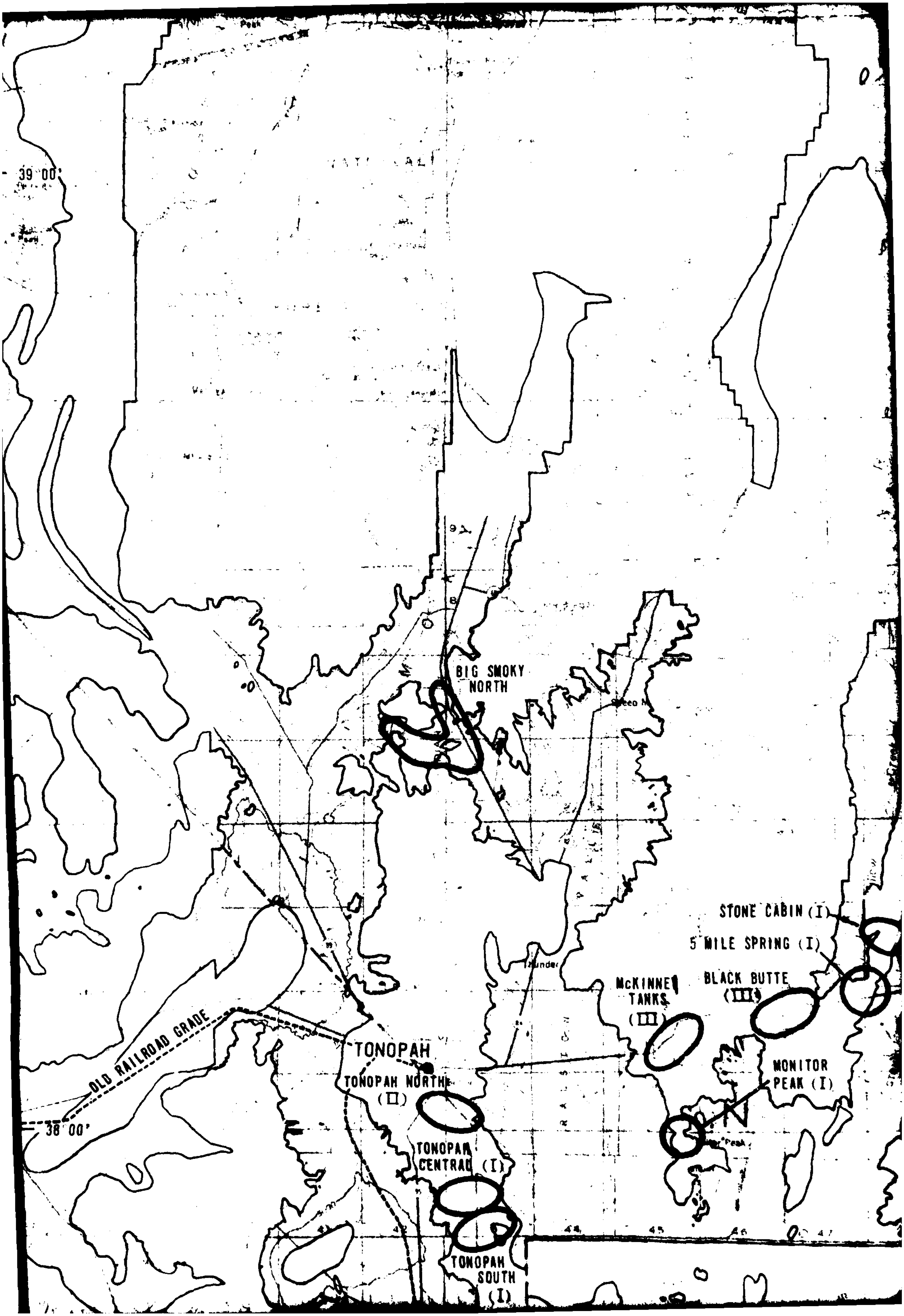

115 00'
NEVADA NORTHERN R.R.
ROBINSON SUMMIT (IV)
McGILL
RIEPETOWN (IV)
ELY
RUTH
STANDARD PAR
MURRY SUMMIT (V)
SACRAMENTO PAS
(IV)
MMIT

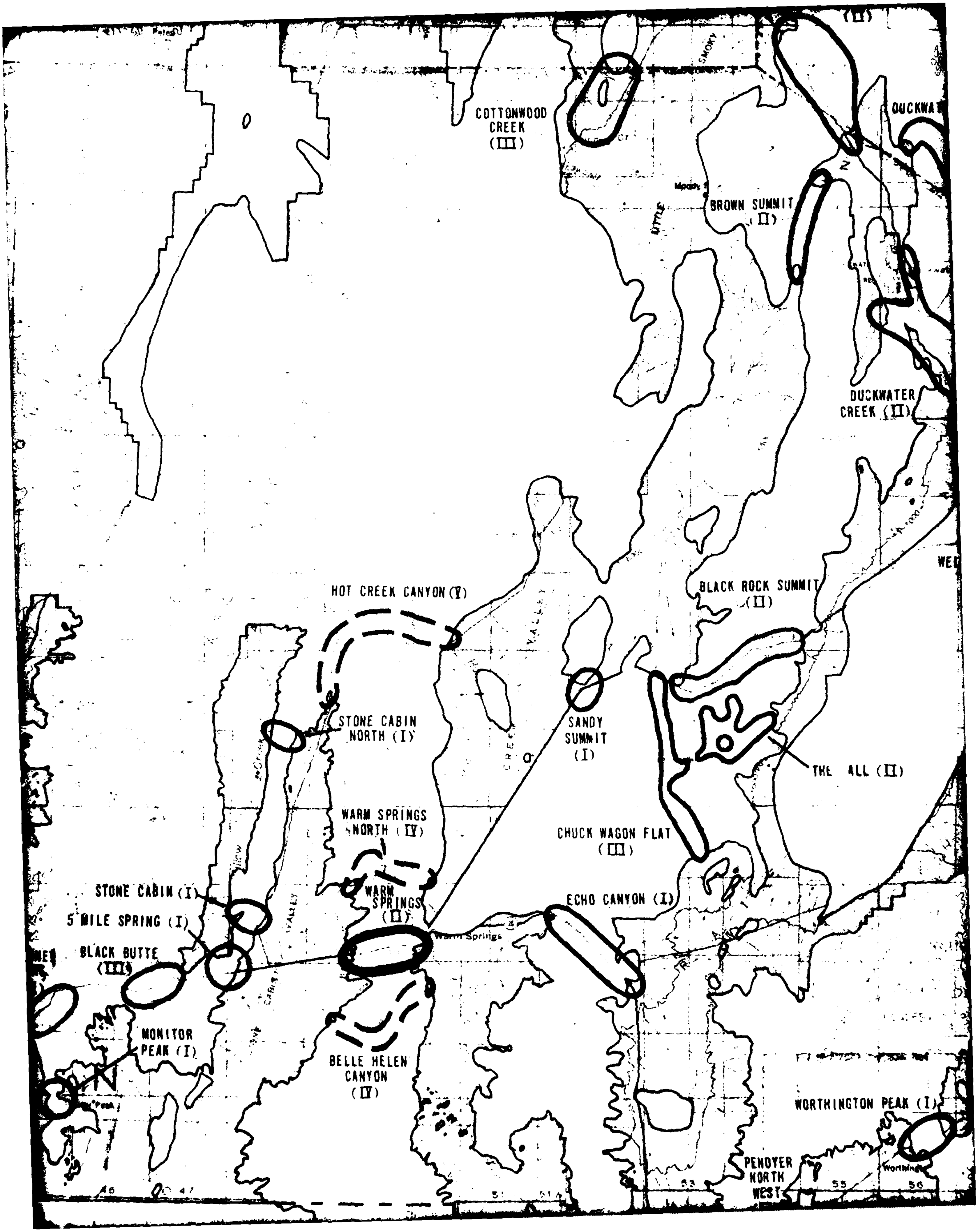


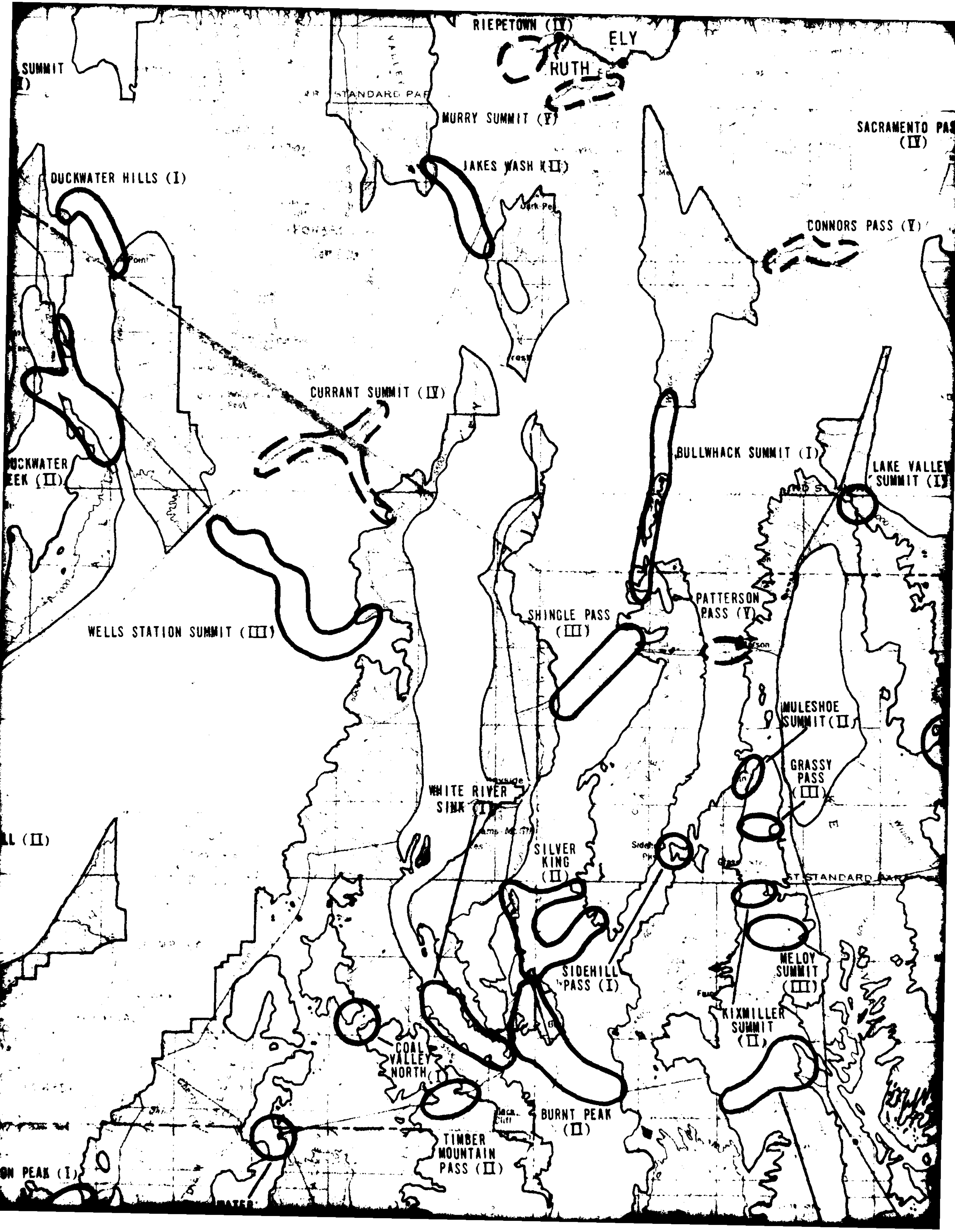
UTAH TEST AND TRAINING RANGE
114°00'
U.S. ARMY
DUGWAY PROVING GRO
DUGWAY PASS(V)
HONEYCOMBS (I)
TOPAZ 5 (II)
TOPAZ 1
(I)
FLAT
GRANITE MTN
(III)
GANDY (III)
SMELTER
KNOLLS
(IV)
SAND
PASS (II)
TOPAZ
Swasey
Bottom
TOPAZ 3
(III)
DOME CANYON PASS
(V)
COWBOY PASS
(II)
MARJUM PASS (V)
2ND



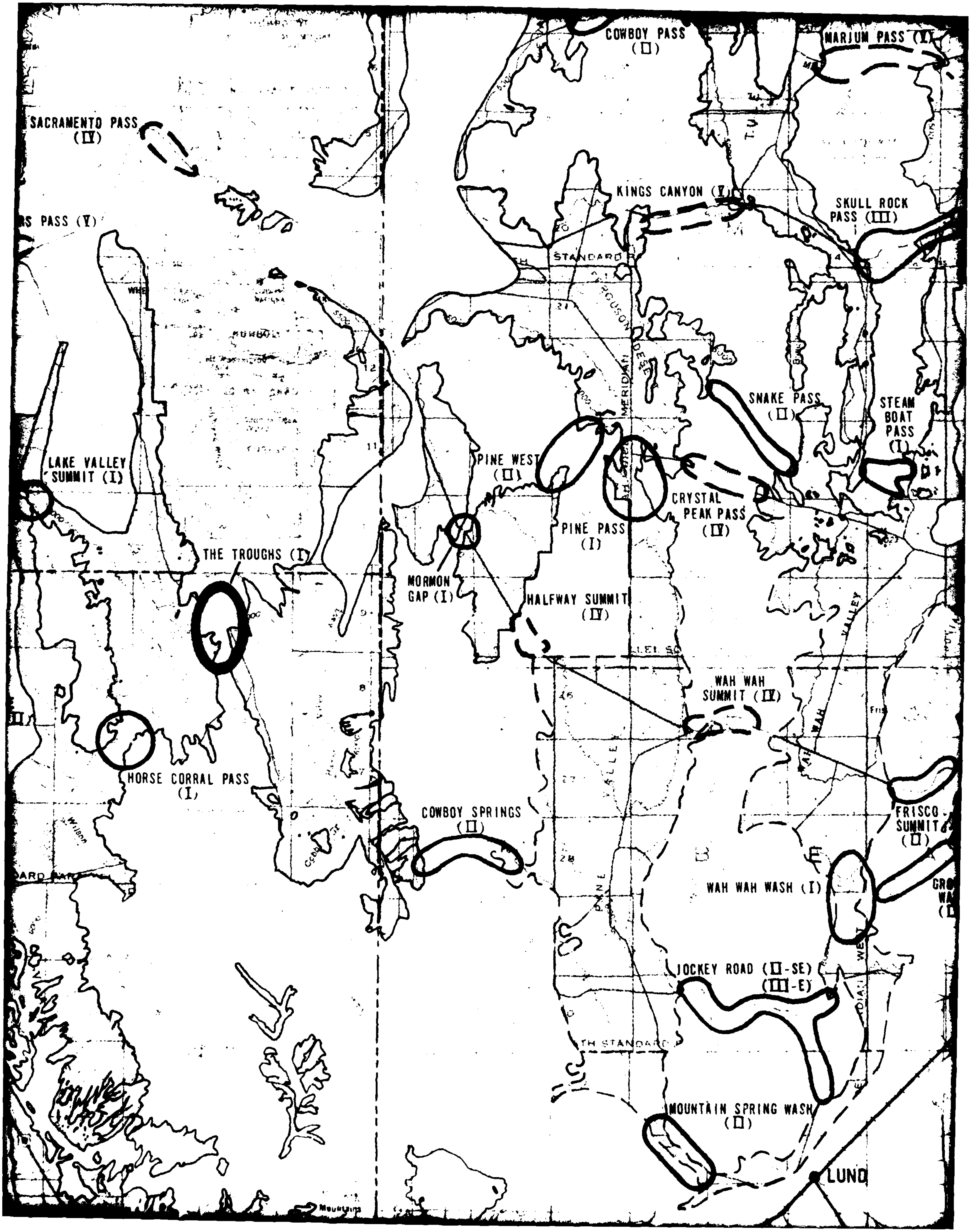
RANGE
113 00'
S. ARMY
ROVING GROUND
40 00'
VALLEY
TOPAZ 5 (II)
TOPAZ 1
(I)
TOPAZ 2
(I)
TOPAZ 4 (IV)
A
B
AZ 3
(II)
CANYON PASS
(V)
S (V)
WEST
DELTA
UNION PACIFIC R.R.


39°00'
BIG SMOKY
NORTH
STONE CABIN (I)
5 MILE SPRING (I)
BLACK BUTTE
(III)
McKINNEY
TANKS
(III)
TONOPAH
OLD RAILROAD GRADE
TONOPAH NORTH
(II)
MONITOR
PEAK (I)
38°00'
TONOPAH
CENTRAL (I)
TONOPAH
SOUTH
(I)

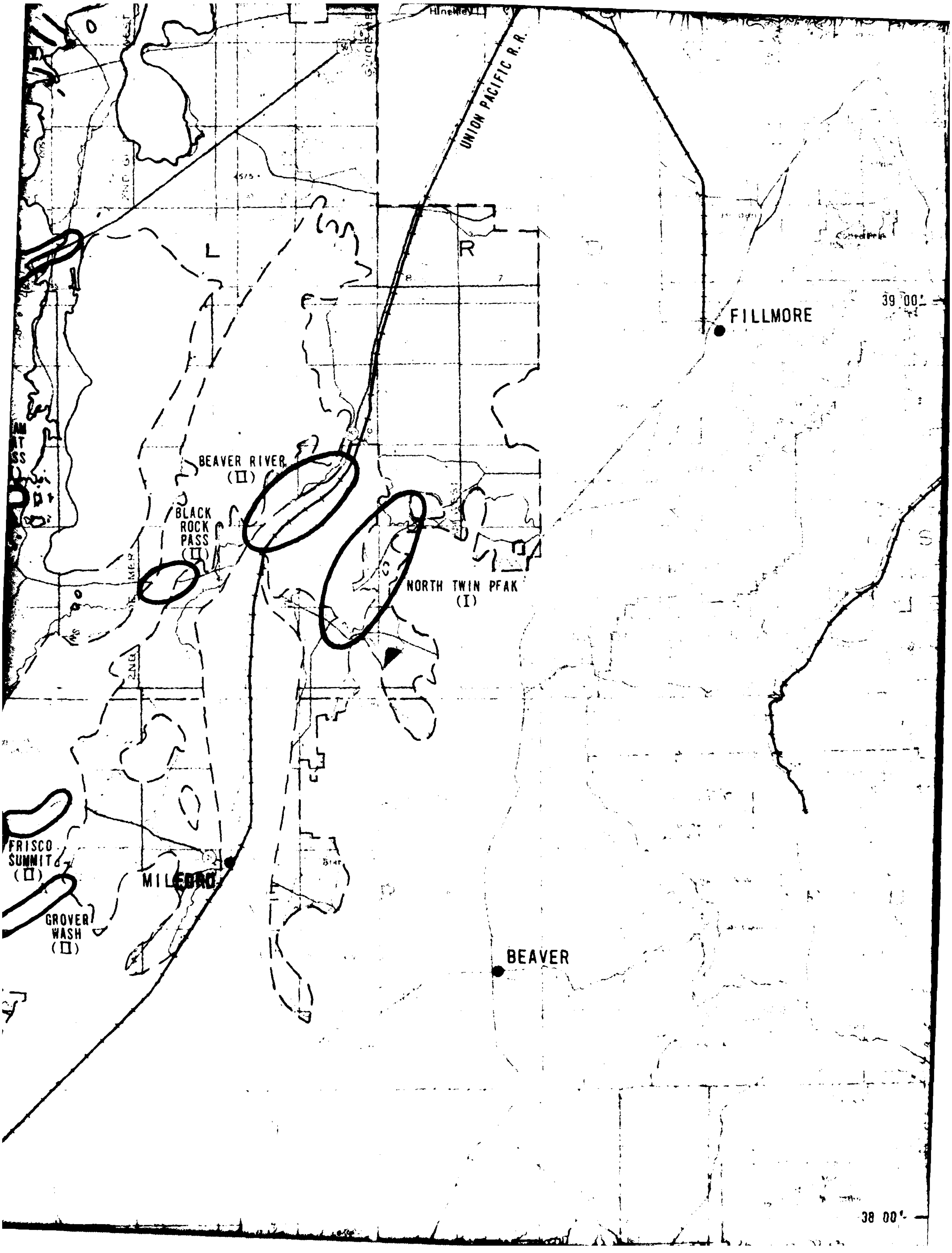

COTTONWOOD CREEK (III)
BROWN SUMMIT (II)
DUCKWA
DUCKWATER CREEK (II)
HOT CREEK CANYON (V)
BLACK ROCK SUMMIT (II)
STONE CABIN NORTH (I)
SANDY SUMMIT (I)
THE ALL (II)
WARM SPRINGS NORTH (IV)
CHUCK WAGON FLAT (III)
STONE CABIN (I)
WARM SPRINGS (II)
ECHO CANYON (I)
5 MILE SPRING (I)
BLACK BUTTE (III)
MONITOR PEAK (I)
BELLE HELEN CANYON (IV)
WORTHINGTON PEAK (I)
PENOYER NORTH WEST
Warm Springs



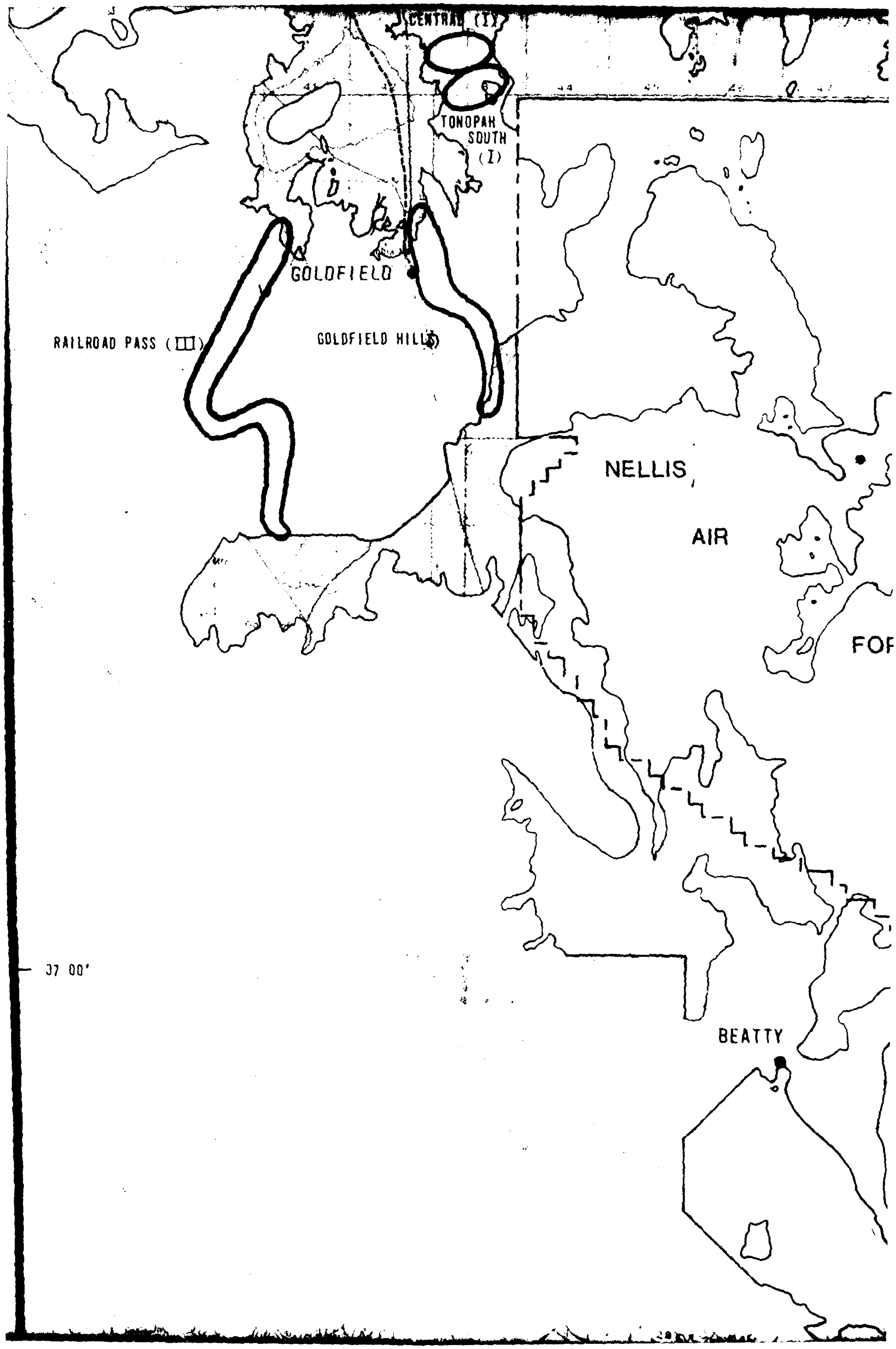
RIEPETOWN (IV)
ELY
RUTH
SUMMIT
STANDARD PAR
MURRY SUMMIT (V)
SACRAMENTO PASS (IV)
JAKES WASH (II)
DUCKWATER HILLS (I)
CONNORS PASS (V)
CURRANT SUMMIT (IV)
BULLWHACK SUMMIT (I)
LAKE VALLEY SUMMIT (I)
DUCKWATER CREEK (II)
PATTERSON PASS (V)
SHINGLE PASS (III)
WELLS STATION SUMMIT (III)
MULESHOE SUMMIT (II)
GRASSY PASS (III)
WHITE RIVER SINK (I)
SILVER KING (II)
ST STANDARD PAR
SIDEHILL PASS (I)
MELOY SUMMIT (III)
KIXMILLER SUMMIT (II)
COAL VALLEY NORTH (I)
BURNT PEAK (II)
TIMBER MOUNTAIN PASS (II)
ON PEAK (I)
LL (II)



COWBOY PASS
(II)
MARJUM PASS (V)
SACRAMENTO PASS
(IV)
KINGS CANYON (V)
SKULL ROCK
PASS (III)
RS PASS (V)
STANDARD
SNAKE PASS
(II)
STEAM
BOAT
PASS
(I)
LAKE VALLEY
SUMMIT (I)
PINE WEST
(II)
CRYSTAL
PEAK PASS
(IV)
PINE PASS
(I)
MORMON
GAP (I)
THE TROUGHS (I)
HALFWAY SUMMIT
(IV)
WAH WAH
SUMMIT (IV)
HORSE CORRAL PASS
(I)
COWBOY SPRINGS
(II)
FRISCO
SUMMIT
(II)
WAH WAH WASH (I)
JOCKEY ROAD (II-SE)
(III-E)
MOUNTAIN SPRING WASH
(II)
LUND



UNION PACIFIC R.R.
L
R
FILLMORE
39 00'
BEAVER RIVER
(II)
BLACK
ROCK
PASS
(II)
NORTH TWIN PEAK
(I)
FRISCO
SUMMIT
(II)
GROVER
WASH
(II)
MILFORD
BEAVER
38 00'



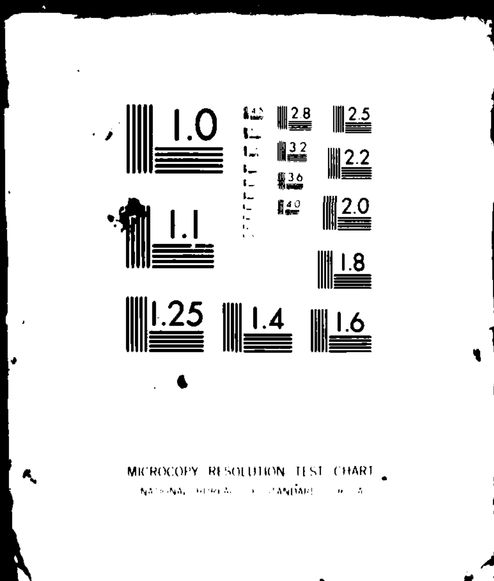
CENTRAL (I)
TONOPAH SOUTH (I)
GOLDFIELD
RAILROAD PASS (III)
GOLDFIELD HILLS
NELLIS
AIR
FOR
37 00'
BEATTY

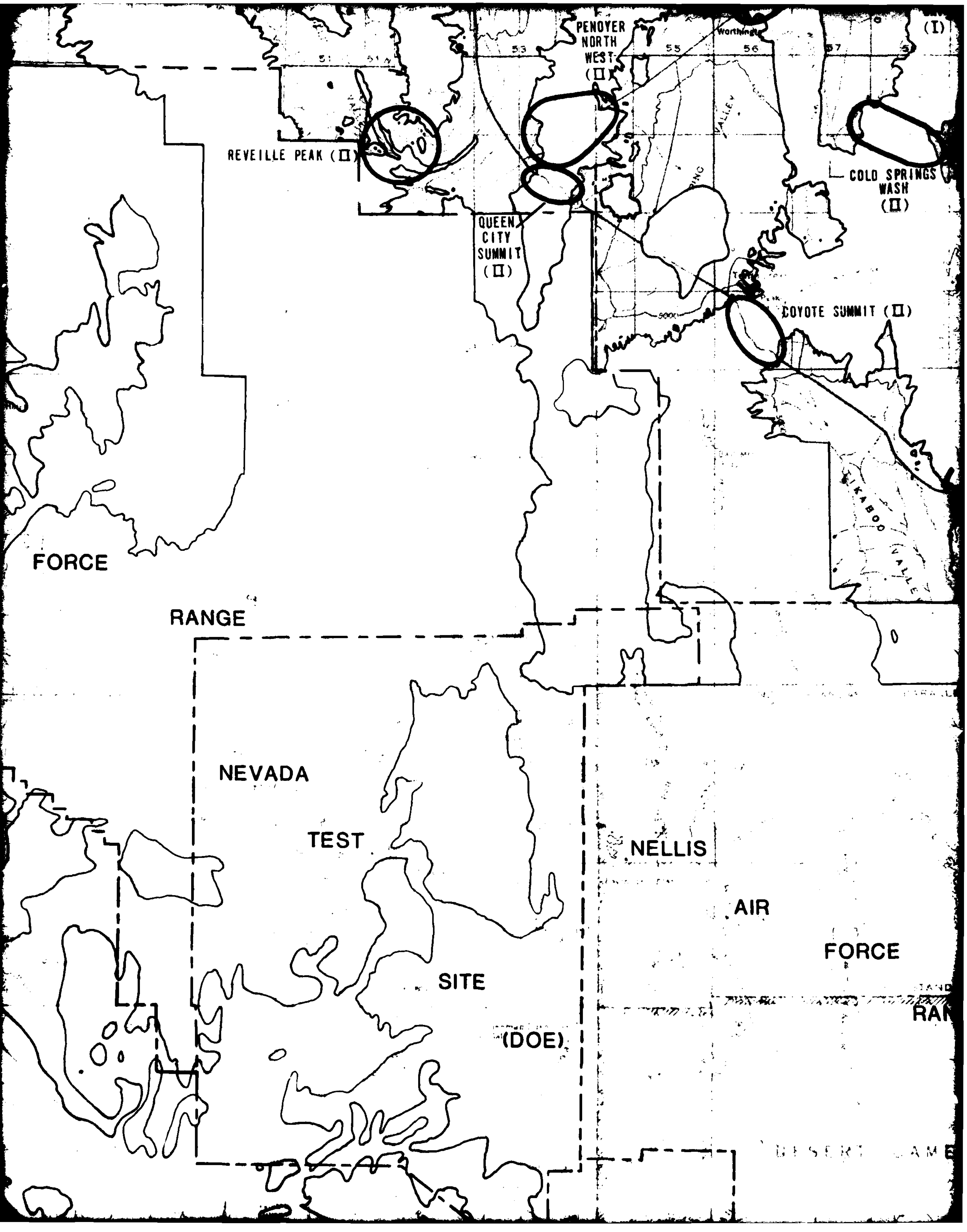
AD-A113 217 ERTEC WESTERN INC LONG BEACH CA F/G 16/1
MX SITING INVESTIGATION. MX SYSTEM SITING SUMMARY REPORT. DTN/A--ETC(U)
JAN 82 F04704-80-C-0006
UNCLASSIFIED E-TR-58-VOL-2 NL

2 of 5

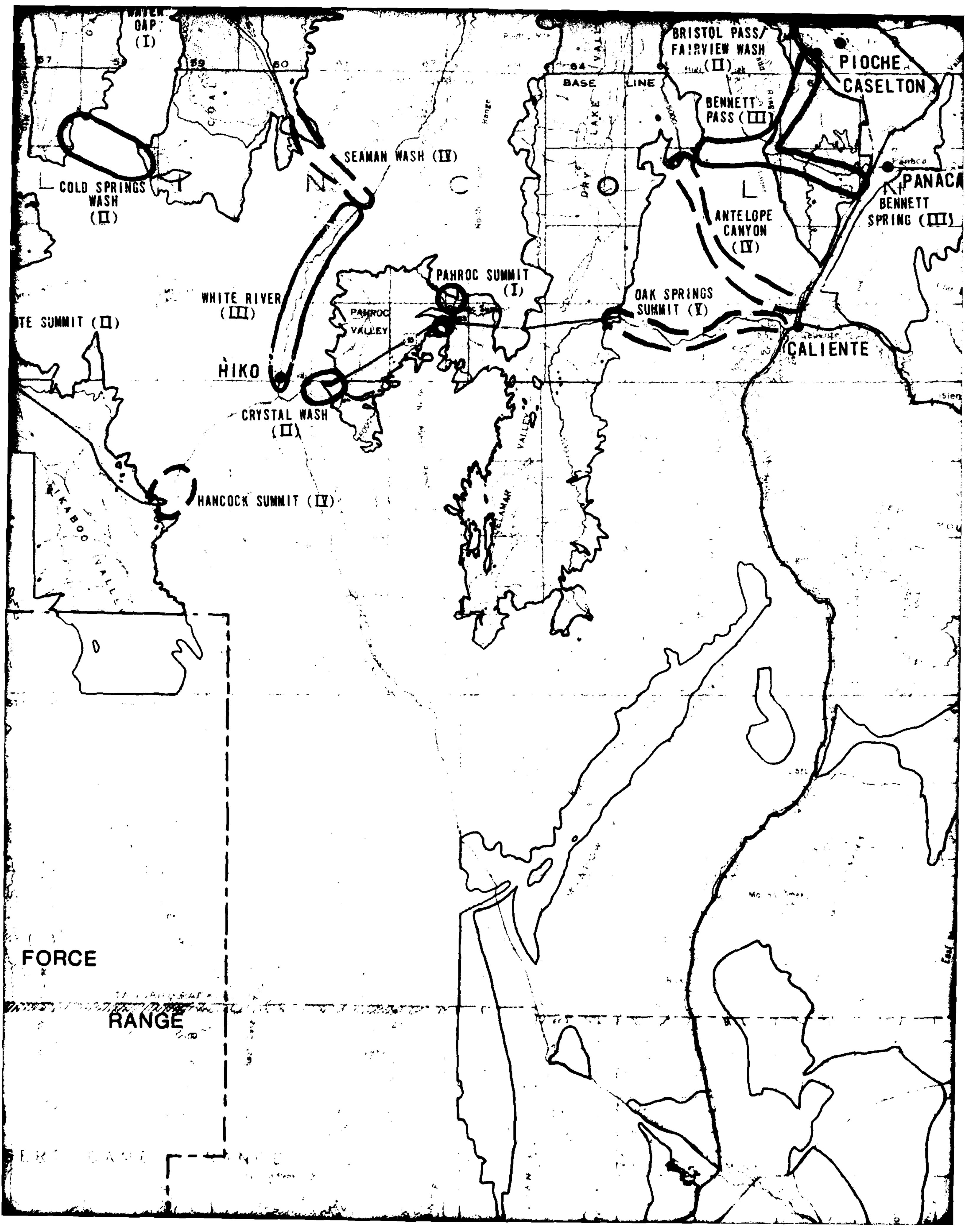
2 OF 5

AD-A113217

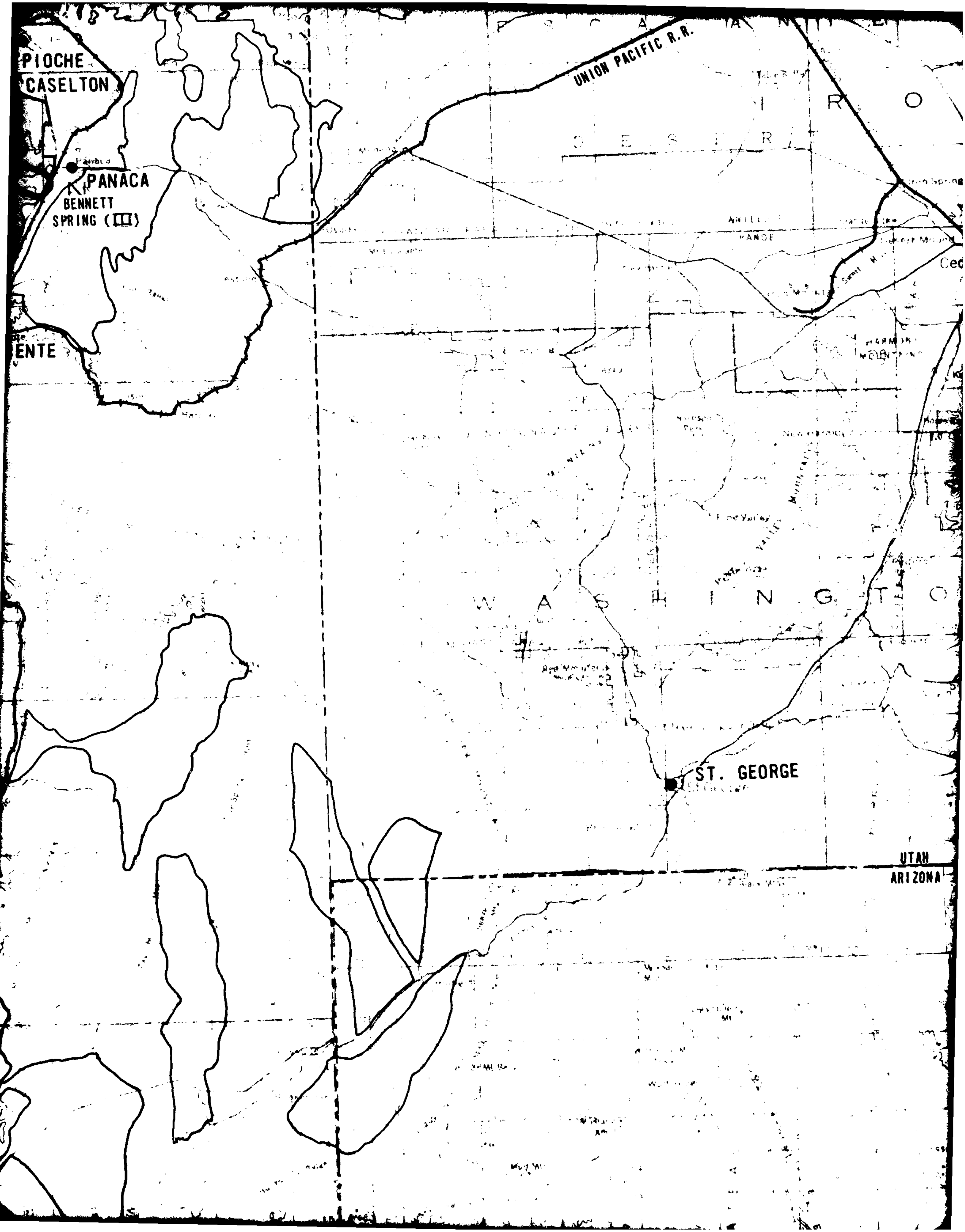




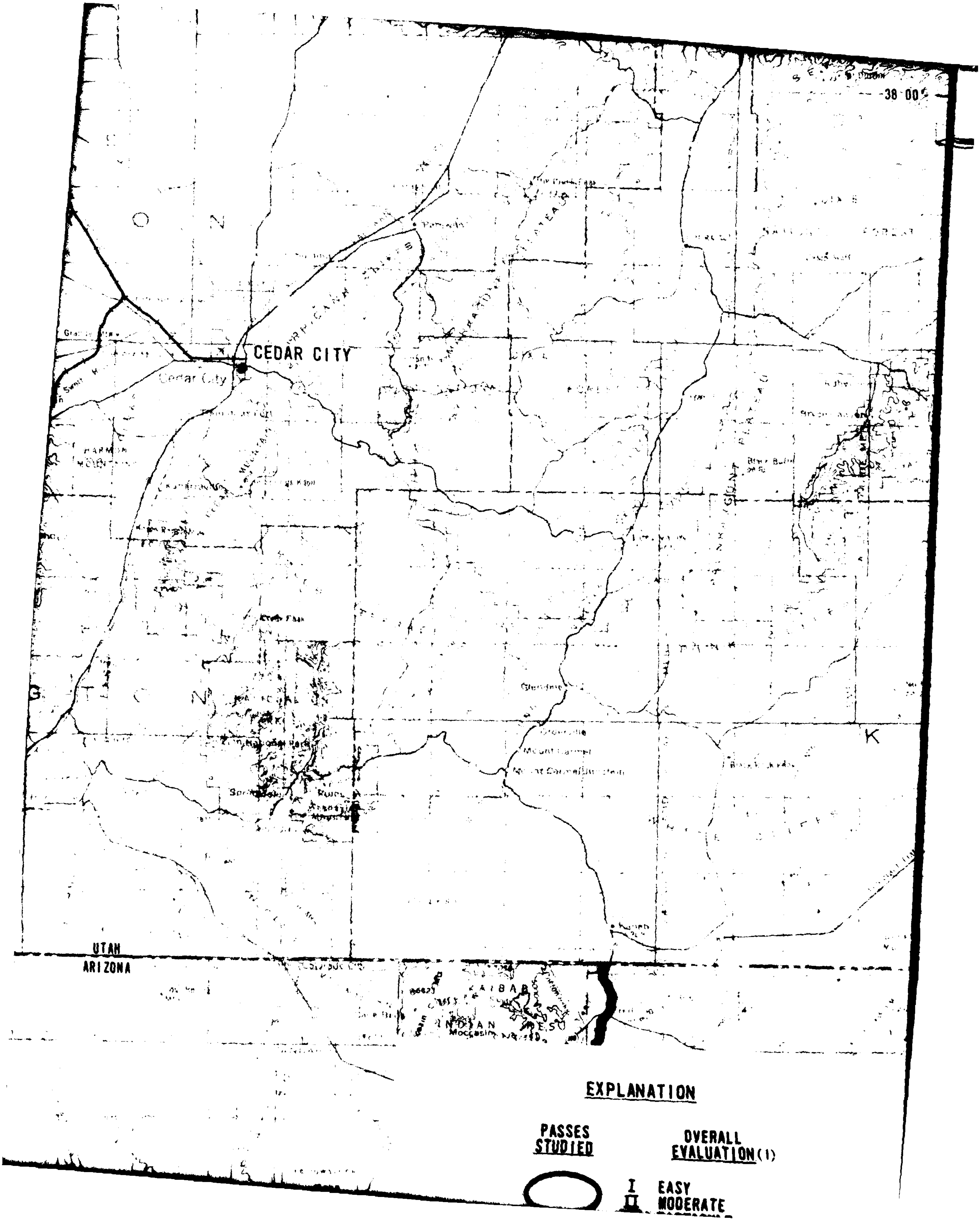
PENOYER NORTH WEST (II)
Worthington
(I)
REVEILLE PEAK (II)
COLD SPRINGS WASH (II)
QUEEN CITY SUMMIT (II)
COYOTE SUMMIT (II)
FORCE
RANGE
NEVADA
TEST
SITE
(DOE)
NELLIS
AIR
FORCE

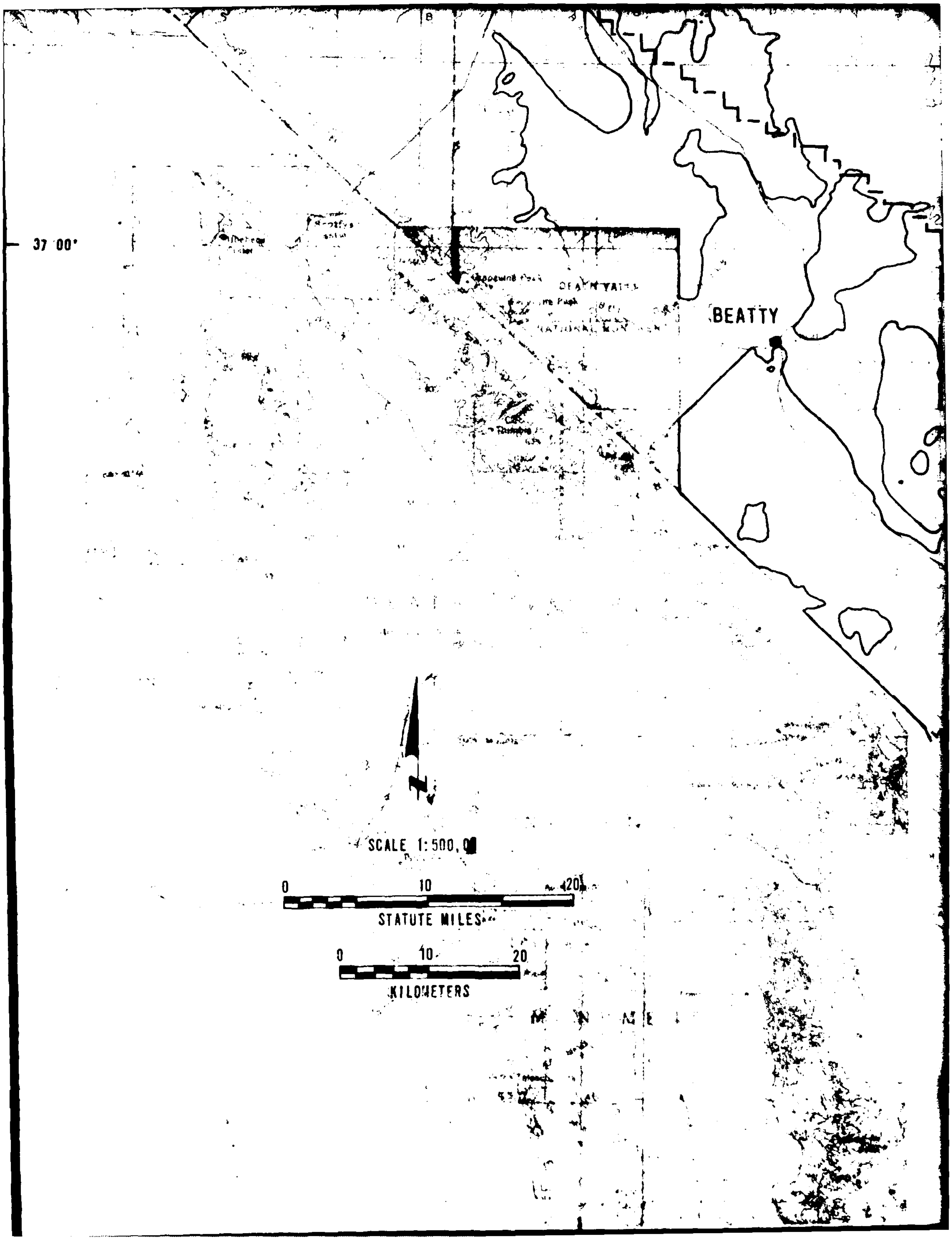


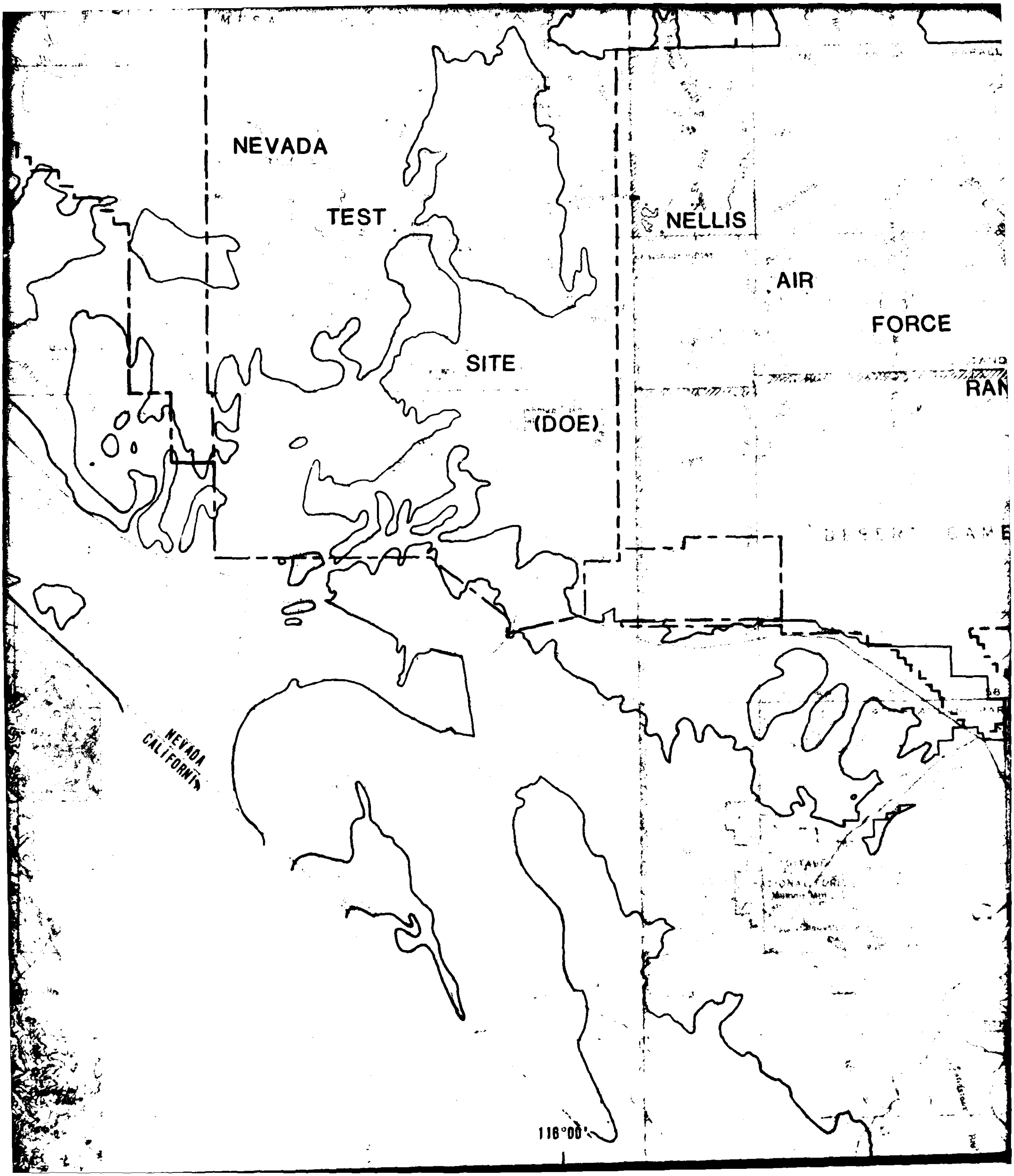
GAP
(I)
BRISTOL PASS/
FAIRVIEW WASH
(II)
PIOCHE
CASELTON
BENNETT
PASS (III)
SEAMAN WASH (IV)
COLD SPRINGS
WASH
(II)
PANACA
BENNETT
SPRING (III)
ANTELOPE
CANYON
(IV)
PAHROC SUMMIT
(I)
WHITE RIVER
(III)
OAK SPRINGS
SUMMIT (V)
TE SUMMIT (II)
PAHROC
VALLEY
CALIENTE
HIKO
CRYSTAL WASH
(II)
HANCOCK SUMMIT (IV)
FORCE
RANGE

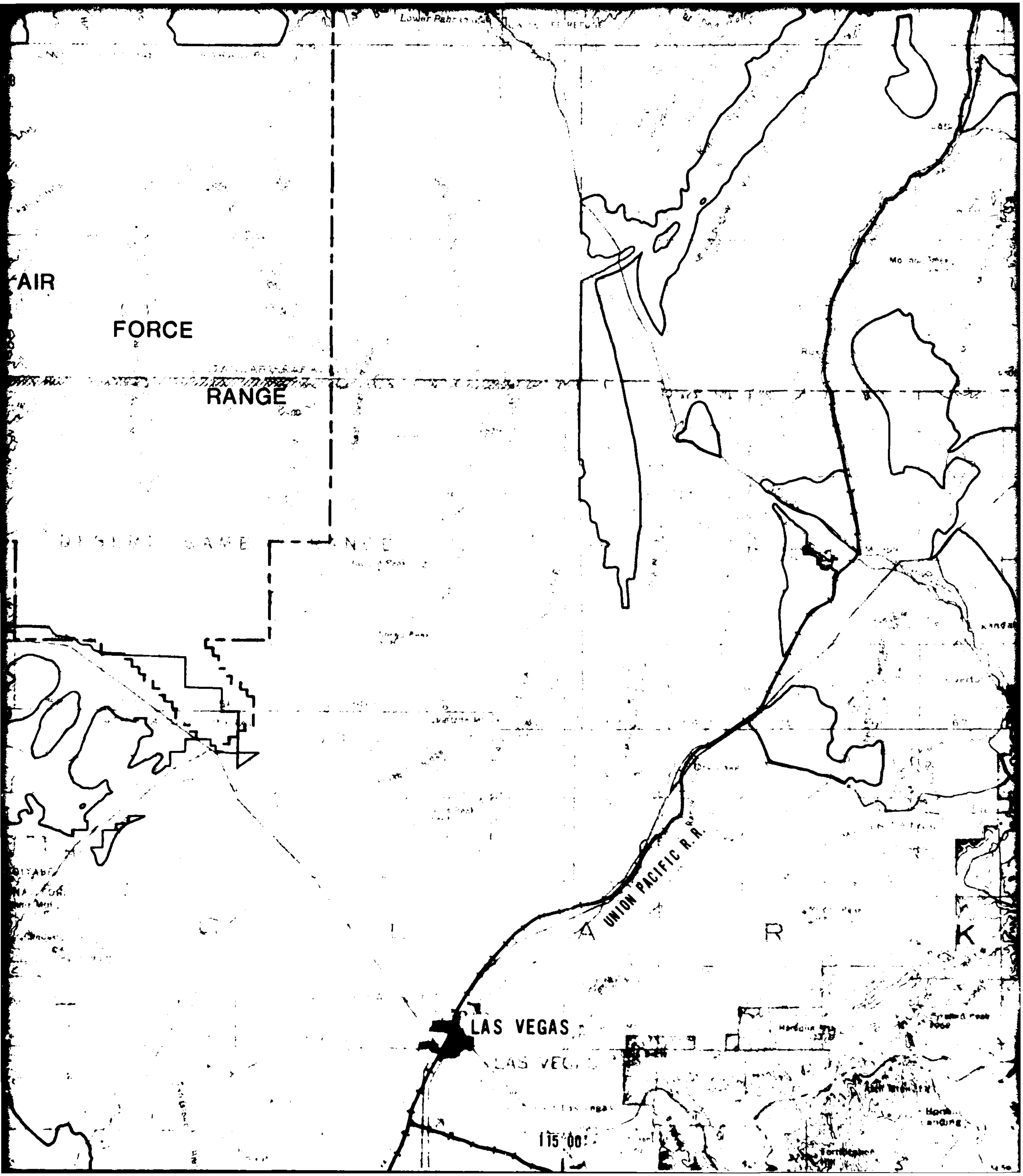


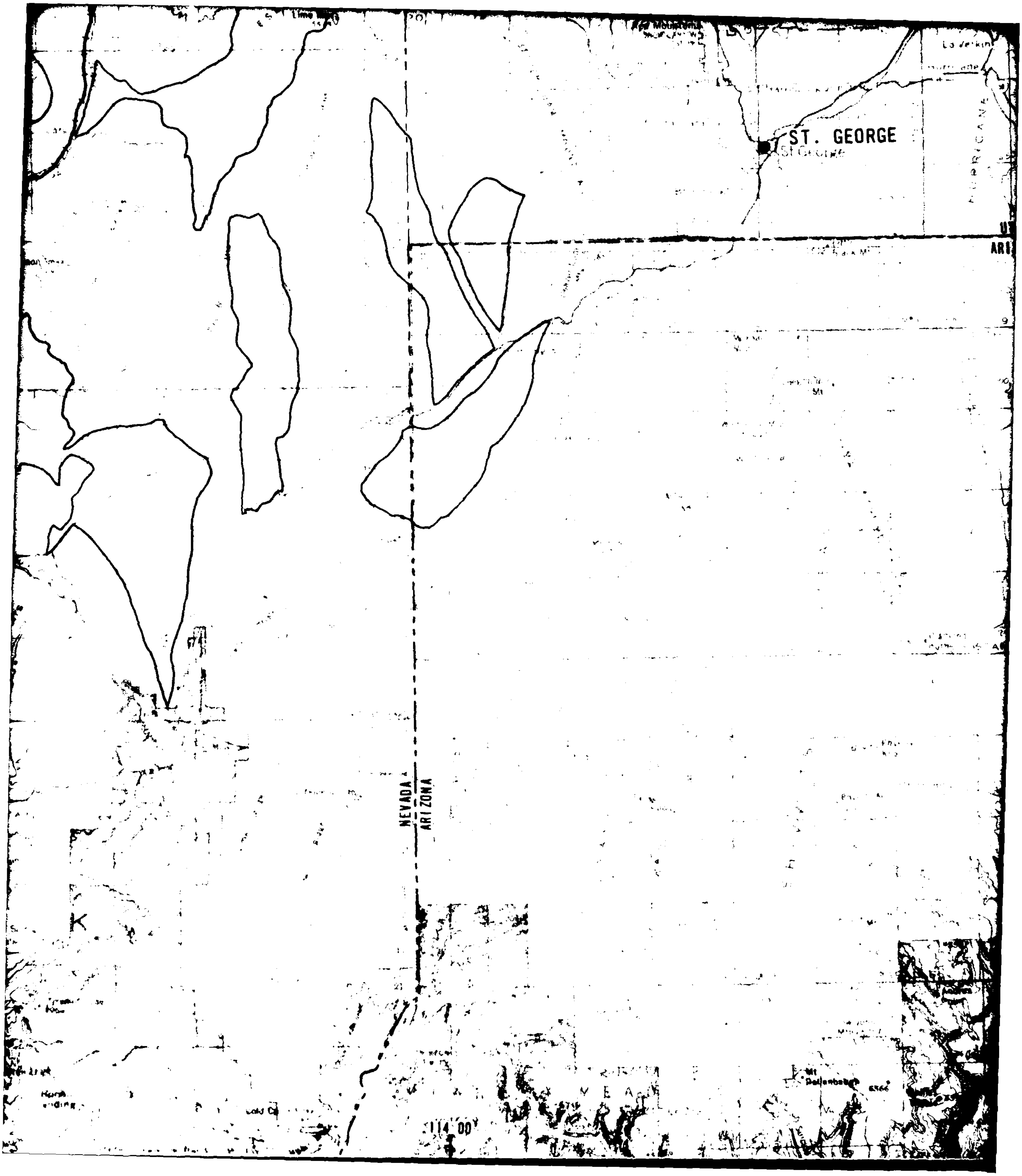
PIOCHE
CASELTON
PANACA
BENNETT SPRING (III)
ENTE
UNION PACIFIC R.R.
D E S E R
W A S H I N G T O
ST. GEORGE
UTAH
ARIZONA

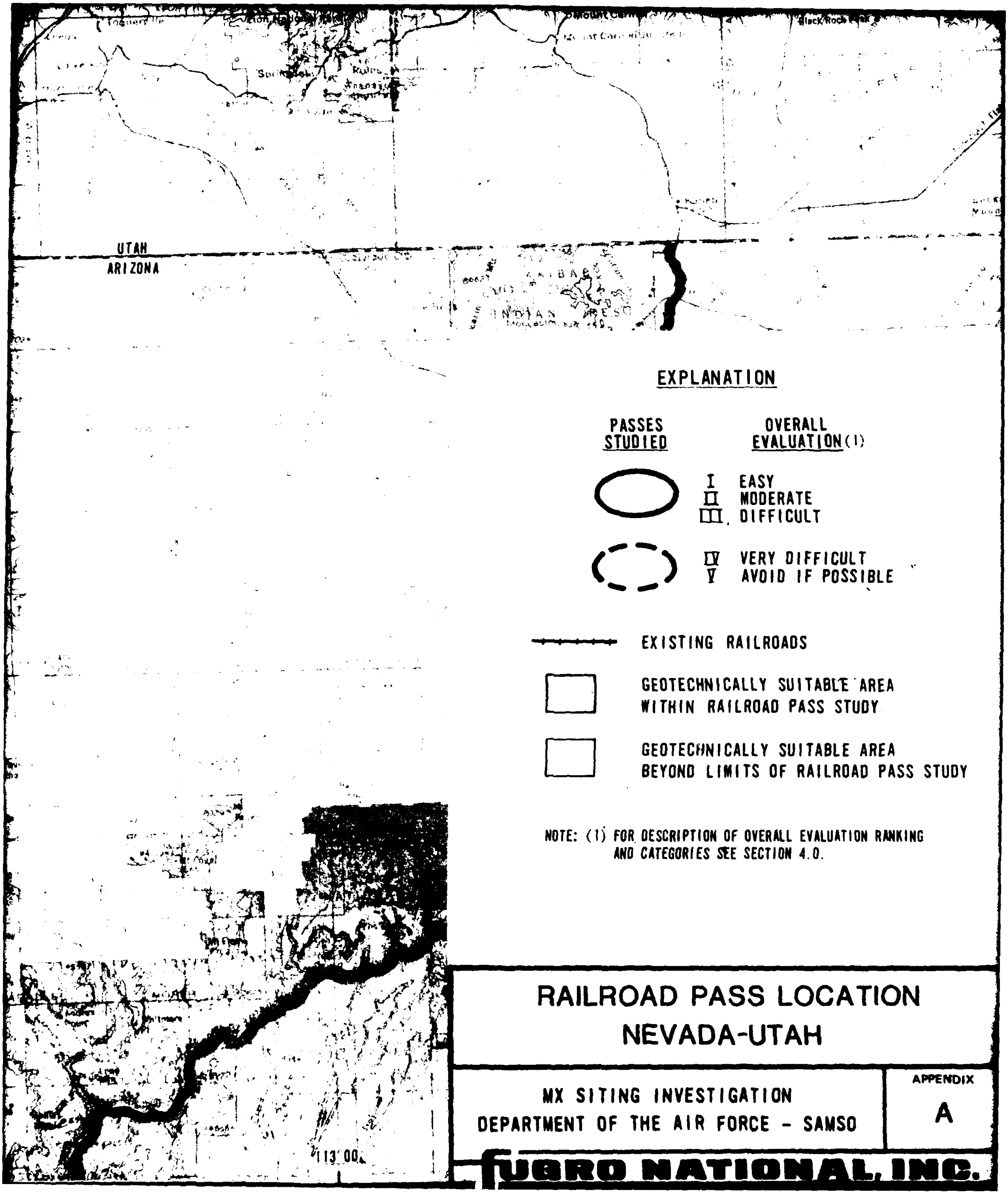

38°00'
CEDAR CITY
Cedar City
Glendale
Mount Carmel
Mount Carmel Junction
K
UTAH
ARIZONA
KAIBAB
INDIAN
EXPLANATION
PASSES STUDIED
OVERALL EVALUATION(1)
I EASY
II MODERATE


37°00'
BEATTY
SCALE 1:500,0
0
10
20
STATUTE MILES
0
10
20
KILOMETERS


NEVADA
TEST
SITE
(DOE)
NELLIS
AIR
FORCE
RAN
NEVADA
CALIFORNIA
116°00'


AIR
FORCE
RANGE
UNION PACIFIC R.R.
LAS VEGAS
115°00'


ST. GEORGE
NEVADA
ARIZONA
114°00'



RAILROAD PASS LOCATION NEVADA-UTAH

MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE - SAMSO

APPENDIX A

FUGRO NATIONAL, INC.

APPENDIX B

FIELD RECONNAISSANCE SUMMARY

PASSES	VALLEYS	PURPOSE	REMARKS

Field Trip No. 1

Dates: 24-25 Nov. 1980

PASSES	VALLEYS	PURPOSE	REMARKS
1. Snake	Pine	1. Evaluate DTN Connections from Beryl/Milford OBs to IOC Valleys.	1. This field trip was made after the formation of the DTN working group. All members participated.
2. Wah Wah Summit	Snake	2. Evaluate DTN connections between Wah Wah, Pine, Snake, and Tule valleys	2. No written evaluation was made for the passes traversed on field trip #1 therefore they were not included into the Pass Evaluation Summary.
3. Sand (Pine NE)	Tule		
4. Crystal Peak (Garrison Black Rock Road)	Wah Wah		

Field Trip No. 2

DATES: 7-12 Dec. 1980

PASSES	VALLEYS	PURPOSE	REMARKS
1 Beck	Butte	1. Gather additional field data for DTN optimization studies.	1. This field trip was one of the two to field check the railroad study passes.
2. Burnt Peak	Cave		
3. Coal NE	Coal		
4. Coal NW	Dry Lake	2. Field review critical passes, proposed ASC locations, and the DTN from the DAA to the IOC.	
5. Cowboy Pine West	Escalante		
6. Cowboy Springs	Garden		
7. Dry Mountain	Hamlin		
8. Duck Water Creek	Jakes	3. Present first 360 miles of DTN assuming a Coyote MOB Beryl MOB and Milford #1 MOB.	
9. Horse Corral	Little Smoky		
10. Kixmiller Summit	Long		
11. Lt. Antelope Summit	Muleshoe	4. Identify potential mining conflicts in Pine and Wah Wah valleys.	
12. Marking Corral Summit	Newark		
13. Mormon Gap	Penoyer		
14. Pancake Summit	Pine	5. Evaluate Wah Wah Summit vs. Snake Pass.	
15. Pruess Lake	Railroad		
16. Railroad North	Snake	6. Evaluate Pine Valley DTN vs. Wah Wah Valley DTN.	
17. Red Rock Summit	Spring		
18. Robbers Roast	Tule	7. Establish a route from Muleshoe to Cave Valley.	
19. Rosencrans	Wah Wah		
20. Sammy Spring	Whirlwind		
21. Side Hill			
22. Silver King			
23. Silver King N			
24. Skull Rock			
25. Snake Central			
26. Snake West			
27. Timber Mountain			
28. Wah Wah Summit			
29. Wah Wah Wash			
30. Water Gap			
31. Wells Station Summit			
32. Worthington Peak			

Note: Passes listed on all field trips are evaluated according to the general consensus and ranked in order of difficulty.

PASSES	VALLEYS	PURPOSE	REMARKS

FIELD TRIP NO. 3
DATES: 17-19 DEC. 1980

PASSES	VALLEYS	PURPOSE	REMARKS
1. Cockalorum Wash 2. Delamar A 3. Delamar B 4. Delamar C 5. Echo Canyon 6. Five Mile Spring 7. Miners 8. Monitor Peak 9. Penoyer NW 10. Queen City Summit 11. Stone Cabin 12. Warm Springs	Antelope Coyote Spring Railroad Ralston Reveille Stone Cabin	1. Gather additional field data for DTN optimization studies. 2. Field review critical passes, proposed ASC locations, and the DTN from the DAA to the IOC. 3. Present first 360 miles of DTN assuming a Coyote MOB Beryl MOB, and Milford #1 MOB. 4. Evaluate IOC DTN from Coyote OB to Delamar Valley through Delamar A, B or C.	1. This field trip was the continuation of the first to field check the railroad study passes. RESULTS: 1. Consensus of the group on coordinated optimized first 360 miles of DTN. 2. Delamar A was chosen as preferred pass from Coyote OB to Delamar Valley. 3. Pine Valley was selected as the DTN connection from Beryl/Milford MOB to the DDA.

FIELD TRIP NO. 4
DATES: 2-6 FEB. 1981

PASSES	VALLEYS	PURPOSE	REMARKS
1. Big Smoky North 2. Gandy 3. Honeycombs 4. Monitor South 5. Sand 6. Tonopah 7. Topaz	Big Smoky Dugway Fish Springs Flat Snake Spring Tule	1. Evaluate exit to west and north from Ralston valley to Big Smoky and Monitor valleys. 2. Evaluate DTN route in NE Utah bewteen Snake, Tule, Fish Springs Flat, and Whirlwind (north) valleys.	1. This field trip is a continuation of first two regional reconnaissance.

FIELD TRIP NO. 5

DATES: 23-26 MAR. 1981

PASSES	VALLEYS	PURPOSE	REMARKS
1. Cowboy	Escalante	1. Evaluate Snake Valley DTN routing.	1. Tule ASC location was preferred over Whirlwind ASC.
2. Dome Canyon	Whirlwind	2. Evaluate Tule ASC location.	
3. Jockey Road		3. Review DTN from Tule Valley to Whirlwind Valley.	
4. Marjum		4. Review Milford OB different DTN options.	
5. Pine South (Milford 1A)		5. Review possibility of moving DTN further away from the Indian Peaks area in Pine Valley.	
6. Pink Knolls (Milford 1B)			
7. Sand Wash			
8. Steam Boat			

FIELD TRIP NO. 6

DATES: 11-14 MAY 1981

PASSES	VALLEYS	PURPOSE	REMARKS
1. Bible Spring	Pine	1. Evaluate possible DTN passes from Escalante Desert to Hamlin and Pine valleys.	1. This was a field trip evaluated possible DTN passes.
2. Modena Draw			
3. Negro Liza Wash			

FIELD TRIP NO. 7

DATES: 15-19 JUNE 1981

PASSES	VALLEYS	PURPOSE	REMARKS
1. Bullwhack Summit	Cave	1. Review the final DTN alignment.	1. This was the last of the DTN field trips, in which the final DTN alignment shown on 15 May 1981 was reviewed.
2. Dugway	Dugway	2. Review new ASC locations.	2. Subsequent realignments were then made to the 15 May 1981 map.
3. Jakes Wash	Fish Springs Flat	3. Evaluate passes not covered during previous trips.	
4. Muleshoe Summit	Hamlin		
5. Patterson	Jakes		
6. The Dell	Lake		
7. The Troughs	Muleshoe		
	Spring		
	Steptoe		
	White River		

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FIELD RECONNAISSANCE SUMMARY

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

APPENDIX C

DTN PASS EVALUATION SUMMARY

PASS NAME / BETWEEN ___ VALLEY AND ___ VALLEY, STATE	ESTIMATED GRADE (MAXIMUM PERCENT)	LENGTH (MILES)	SUMMIT ELEVATION (FEET)	ORIENTATION	ALIGNMENT	CONSTRICTIONS	FLOOD POTENTIAL	DRAINA… FREQUEN…
BECK Newark & Long, NV.	2(b)	4	6360	NE-SW	Gradual Curves	None	Low	Few
BIBLE SPRING Pine & Escalante, UT.	5(b)	6	6100	N-S	Nearly Straight	None	Low	Several
BIG SMOKY NORTH Big Smoky & Ralston, NV.	2(b)	10	6250	NW-SE	Nearly Straight	None	Low	Several
BULLWHACK SUMMIT Steptoe & Cave, NV.	3(a)	10	7260	N-S	Nearly Straight to Gradual Curves	None	Low	Few
BURNT PEAK Dry Lake & White River, NV.	4(a)	5	5980	E-W	Gradual Curves	At Pass	Low to Moderate	Severa…

Notes: (a) DATA ESTIMATED FROM 7 1/2' (1:24,000) TOPOGRAPHIC MAP COVERAGE
(b) DATA ESTIMATED FROM 15' (1:62,500) TOPOGRAPHIC MAP COVERAGE
(c) DATA ESTIMATED FROM 2° (1:250,000) TOPOGRAPHIC MAP COVERAGE
(d) OVERALL EVALUAT…
I - EASY
II - MODERATE
III - DIFFICULT
IV - VERY DIFFIC…
V - AVOID IF PO…

FLOOD OTENTIAL	DRAINAGE CROSSINGS		EXCAVATIONS		OVERALL EVALUATIONS	REMARKS
	FREQUENCY	MAJOR STRUCTURES	DIFFICULTY	GRADING		
Low	Few	None	Easy	Light	I	Unpaved road, powerline crosses through pass area. Minor constriction at summit. Good raptor and sage grouse key range, good antelope range.
Low	Several	None	Moderate	Light	I	Unpaved road. Some private property. Active ranching. Rock outcrops. Some realignment required near summit to minimize grade.
Low	Several	None	Easy	Light to Moderate	I	Hwy 8A. Utility line at north end. Several alternate alignments to south.
Low	Few	None	Easy	Light	I	Unpaved road. WSA on east side. Private property on south. Few rock outcrops. Long DTN to 2 clusters in Steptoe Valley. Sage grouse brood use area to west, and strutting grounds to north. Archaeological sites on both side.
Low to Moderate	Several	None	Moderate	Moderate	II	Unpaved road. Westside will require cutting across drainages. Rock outcrops. Potential antelope range.

OVERALL EVALUATIONS
I - EASY
I - MODERATE
I - DIFFICULT
V - VERY DIFFICULT
V - AVOID IF POSSIBLE

(e) -BUREAU OF LAND MANAGEMENT (BLM) OWNERSHIP UNLESS OTHERWISE STATED
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DTN PASS EVALUATION SUMMARY

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

30 NOV 81

PASS NAME ______ BETWEEN ______ VALLEY AND ______ VALLEY, STATE	ESTIMATED GRADE (MAXIMUM PERCENT)	LENGTH (MILES)	SUMMIT ELEVATION (FEET)	ORIENTATION	ALIGNMENT	CONSTRICTIONS	FLOOD POTENTIAL	DRAI FREQU
COAL NORTHEAST Coal & White River, NV.	1(b)	3	5260	NE-SW	Nearly Straight	None	Low	Few
COAL NORTHWEST Garden & Coal, NV.	2(b)	3	5433	NW-SE	Gradual Curves	None	Low	Sever
COCKALORUM WASH Little Smoky & Antelope, NV.	4(b)	4	7050	NW-SE	Gradual Curves	None	Low	Sever
COWBOY Tule & Snake, UT.	4(b)	4	5720	NE-SW	Nearly Straight to Gradual Curves	None	Low	Fe
COWBOY SPRINGS Pine & Hamlin, UT.	3(a)	10	7250	E-W	Gradual Curves	None	Moderate	Num

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NS	FLOOD POTENTIAL	DRAINAGE CROSSINGS		EXCAVATIONS		OVERALL EVALUATIONS	REMARKS
		FREQUENCY	MAJOR STRUCTURES	DIFFICULTY	GRADING		
	Low	Few	None	Easy	Light	I	Unpaved road, wide flat pass.
	Low	Several	None	Easy	Light	I	Unpaved road. Wide open pass.
	Low	Several	None	Easy	Light	I	Unpaved road. Southern approach flatter grade. Road bed in wash, should be raised to prevent flooding.
e	Low	Few	None	Easy	Light	I	Unpaved road, old Hwy. 50. Both approaches flatter grade than maximum.
e	Moderate	Numerous	None	Moderate	Moderate	II	Unpaved road. Extensive pinyon-juniper with furbearer sign, raptors. Key antelope range on both sides.

(d) OVERALL EVALUATIONS
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DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

30 NOV 81

PASS NAME ___ BETWEEN ___ VALLEY AND ___ VALLEY, STATE	ESTIMATED GRADE (MAXIMUM PERCENT)	LENGTH (MILES)	SUMMIT ELEVATION (FEET)	ORIENTATION	ALIGNMENT	CONSTRICTIONS	FLOOD POTENTIAL	FI
COWBOY PINE WEST Snake & Snake, UT.	4(b)	5	6760	NE-SW	More than Two Sharp Curves	None	Moderate to High	Nu
DELAMAR "A" Coyote & Delamar, NV.	7(a)	7	4650	NE-SW	Gradual Curves	At Pass	Moderate	Se
DELAMAR "B" Pahranagat & Delamar, NV.	7(a)	7	4650	NE-SW	Gradual Curves	At Pass	Moderate	Se
DELAMAR "C" Pahranagat & Delamar, NV.	3(b)	11	4750	NE-SW	One or Two Sharp Curves	None	Low to Moderate	S
DOME CANYON Whirlwind & Tule, UT.	9(a)	12	6750	E-W	One or Two Sharp Curves	At Pass & Locally	Moderate	

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(d) OVERALL E
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II - MODERA
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IV - VERY
V - AVOID

FLOOD POTENTIAL	DRAINAGE CROSSINGS		EXCAVATIONS		OVERALL EVALUATIONS	REMARKS
	FREQUENCY	MAJOR STRUCTURES	DIFFICULTY	GRADING		
Moderate to High	Numerous	One	Moderate	Moderate	II	Unpaved road. Many culverts required. Rock at summit, Bald eagle and antelope year round range.
Moderate	Several	None	Difficult	Moderate to Heavy	III	Unpaved road. WSA to SE of gravel road. 10% grade for 2000' south of pass. Southern end terminates at Hwy. 93.
Moderate	Several	None	Difficult	Moderate to Heavy	III	Unpaved road. Southern end enters wildlife refuge and increases length of co-existing highway. 10% grade for 2000' south of pass.
Low to Moderate	Several	One	Moderate	Moderate	II	Unpaved road. 1/4 - 1/2 mile wildlife area. Longer distance than alt. "A" and "B."
Moderate	Numerous	None	Difficult	Moderate to Heavy	V	Poor DTN pass. Potential service road. Unpaved road. 6 - 7% grade on western approach. Minor pass at el. 6610 on eastern approach. WSA to north and south.

OVERALL EVALUATIONS
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DTN PASS EVALUATION SUMMARY

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

30 NOV 81

PASS NAME ____ BETWEEN ____ VALLEY AND ____ VALLEY, STATE	ESTIMATED GRADE (MAXIMUM PERCENT)	LENGTH (MILES)	SUMMIT ELEVATION (FEET)	ORIENTATION	ALIGNMENT	CONSTRICTIONS	FLOOD POTENTIAL	DRAIN… FREQUE…
DRY MOUNTAIN Newark & Long, NV.	4(b)	4	6650	E-W	Gradual Curves	At Pass & Locally	Moderate	Severa…
DUCKWATER CREEK Railroad & Railroad, NV.	4(b)	8	5650	NW-SE	Gradual Curves	None	Low	Few
DUGWAY Dugway & Fish Springs Flat, UT.	8(a)	2	5410	E-W	One or Two Sharp Curves	At Pass	Low	Sever…
ECHO CANYON Hot Creek/Reveille & Railroad, NV	0.5(a)	7	5145	NW-SE	Nearly Straight	At Pass	Low	Few
FIVE MILE SPRING Stone Cabin East & Stone Cabin West, NV.	2(c)	2	5800	NW-SE	Nearly Straight	None	Low	Fe…

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FLOOD POTENTIAL	DRAINAGE CROSSINGS		EXCAVATIONS		OVERALL EVALUATIONS	REMARKS
	FREQUENCY	MAJOR STRUCTURES	DIFFICULTY	GRADING		
Moderate	Several	One	Moderate	Moderate	II	Unpaved road. Easy approaches on east and west sides. Cut (15') thru ridge at summit. Extensive raptor and sage grouse. Some wild horses. Good antelope/deer area.
Low	Few	One	Easy	Light	I	Paved road (Hwy. 20). Indian reservation (on southwest). Must stay NE of reservation. Key antelope range.
Low	Several	None	Moderate to Difficult	Heavy	III	Unpaved road. Grade 10% for 1000 ft. About 50 ft. cut at summit. East side more difficult than west. Historical pony express route. Rock at summit.
Low	Few	None	Easy to Moderate	Light to Moderate	I	Hwy. 25. Private ranch NW end of canyon. WSA north of Hwy. 25. Reservoir at south end of pass. Constriction at lower edge of pass.
Low	Few	None	Easy	Light	I	South end of alignment terminates at Hwy. 6. Half of alignment is private property on south end and half is BLM on north. Ranch at spring.

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DTN PASS EVALUATION SUMMARY

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

30 NOV 81

PASS NAME ____ BETWEEN ____ VALLEY AND ____ VALLEY, STATE	ESTIMATED GRADE (MAXIMUM PERCENT)	LENGTH (MILES)	SUMMIT ELEVATION (FEET)	ORIENTATION	ALIGNMENT	CONSTRICTIONS	FLOOD POTENTIAL	DRAINA FREQUE
GANDY Snake & Spring, NV.	4(c)	14	6900	NW-SE	Gradual Curves	Locally	Low	Severa
HONEY COMBS Tule & Snake, UT.	3(b)	3	5200	NW-SE	Nearly Straight	None	Low	Few
HORSE CORRAL Spring & Lake, NV.	2(a)	4	6400	NE-SW	Gradual Curves	None	Low	Severa
JAKES WASH Jakes & White River, NV.	<2(b)	10	6440	NW-SE	Nearly Straight	None	Low	Few
JOCKEY ROAD Pine & Escalante, UT.	4(a)	16	6820	E-W	Gradual Curves	At Pass & Locally	Moderate	Sever

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FLOOD POTENTIAL	DRAINAGE CROSSINGS		EXCAVATIONS		OVERALL EVALUATIONS	REMARKS
	FREQUENCY	MAJOR STRUCTURES	DIFFICULTY	GRADING		
Low	Several	One	Moderate	Light to Moderate	II	Unpaved road, east side steeper than west. Few rock outcrops.
Low	Few	None	Easy	Light	I	Unpaved road, steeper to NW.
Low	Several	None	Moderate	Light to Moderate	I	Unpaved road. WSA on south. Sage grouse and antelope key range. Migration route from summer range to Lake Valley.
Low	Few	None	Easy	Light	I	Unpaved road. Few rock outcrops. Crosses Hwy. 6.
Moderate	Several	One or Two	Moderate	Moderate	II	Unpaved road. Several short washes. Utah prairie dogs south of alignment near summit. Difficult grading at several short sections of rock outcrops.

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PASS NAME ____ BETWEEN ____ VALLEY AND ____ VALLEY, STATE	ESTIMATED GRADE (MAXIMUM PERCENT)	LENGTH (MILES)	SUMMIT ELEVATION (FEET)	ORIENTATION	ALIGNMENT	CONSTRICTIONS	FLOOD POTENTIAL	DRAINA FREQUE
KIXMILLER SUMMIT Lake & Muleshoe, NV.	4(a)	4	6612	E-W	Gradual Curves	None	Low to Moderate	Severa
LITTLE ANTELOPE SUMMIT Newark & Jakes, NV.	5(b)	12	7438	E-W	More than Two Sharp Curves	At Pass & Locally	Moderate	Numero
MARJUM Whirlwind & Tule, UT.	8(a)	8	6220	E-W	More than Two Sharp Curves	Entire Route West of Pass	High	Severa
MARKING CORRAL SUMMIT Butte & Jakes, NV.	2(b)	6	7050	N-S	Gradual Curves	None	Low	Severa
MINERS PASS (COCKALORUM ALT.) Little Smoky & Antelope, NV.	8(b)	4	7000	NW-SE	More than Two Sharp Curves	Entire Route	Low to Moderate	Numer

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FLOOD POTENTIAL	DRAINAGE CROSSINGS		EXCAVATIONS		OVERALL EVALUATIONS	REMARKS
	FREQUENCY	MAJOR STRUCTURES	DIFFICULTY	GRADING		
Low to Moderate	Several	None	Moderate	Light	II	Unpaved road. One quarter private property at east end. Good deer range.
Moderate	Numerous	One	Difficult	Heavy	III	Paved road. Private property south of east end. Much rock excavation on west side. Hwy. 50. Parallels drainage east of summit. Good deer habitat. Antelope range at periphery.
High	Several	More than One	Difficult	Moderate to Heavy	V	Poor DTN pass. Possible service road. Unpaved road. Old Hwy. 50. 230 kv line along east portion. Some resistant rock. WSA to north and south.
Low	Several	None	Moderate	Moderate	II	Unpaved road. South end has some rock. Could follow Hwy. 50 for 2 or 3 miles. Good deer and raptor area.
Low to Moderate	Numerous	None	Moderate	Heavy	III	Unpaved road halfway up pass (could not reach summit). Numerous active mines. Cockalorum alternative.

OVERALL EVALUATIONS
I - EASY
II - MODERATE
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DTN PASS EVALUATION SUMMARY

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

PASS NAME BETWEEN ______ VALLEY AND ______ VALLEY, STATE	ESTIMATED GRADE (MAXIMUM PERCENT)	LENGTH (MILES)	SUMMIT ELEVATION (FEET)	ORIENTATION	ALIGNMENT	CONSTRICTIONS	FLOOD POTENTIAL	DRAIN… FREQUE…
MODENA DRAW Hamlin & Escalante, UT.	3(b)	11	6625	N-S	Nearly Straight	Locally	Low to Moderate	Sever…
MONITOR PEAK (N & S) Ralston & Stone Cabin, NV.	1(c)	2(N) 4(S)	5425 (S) 5600 (N)	E-W	Nearly Straight	None	Low	Few…
MONITOR SOUTH Ralston & Monitor, NV.	4(b)	5	7250	E-W	Gradual Curves	At Pass & Locally	Low to Moderate	Sever…
MORMAN GAP Hamlin & Snake, UT.	2(a)	1	5700	NW-SE	Nearly Straight	None	Low	Fe…
MULESHOE SUMMIT Lake & Muleshoe, NV.	3(a)	4	6450	NE-SW	Nearly Straight to Gradual Curves	None	Low	F…

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(d) OVERALL EVALU…
I - EASY
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V - AVOID IF…

FLOOD POTENTIAL	DRAINAGE CROSSINGS		EXCAVATIONS		OVERALL EVALUATIONS	REMARKS
	FREQUENCY	MAJOR STRUCTURES	DIFFICULTY	GRADING		
Low to Moderate	Several	One	Moderate	Moderate	III	Unpaved road. Some private property, active ranching. Excessive length of pass. Moderate grading throughout length of pass.
Low	Few	None	Easy	Light	I	Paved road old Hwy. 25 (south pass). Unpaved road (north pass). Traverse alluvial fan. North pass shorter distance.
Low to Moderate	Several	One	Moderate	Moderate	II	2 miles unpaved road (west), no access towards east. Alternate alignments Hunts Canyon to south and dirt road to north. Numerous mining claims in the area.
Low	Few	One	Easy	Light	I	Coexisting with Hwy. 21. Bald eagle foraging area.
Low	Few	None	Easy	Light	I	Unpaved road. Good DTN pass.

(d) OVERALL EVALUATIONS
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PASS NAME ______ BETWEEN ______ VALLEY AND ______ VALLEY, STATE	ESTIMATED GRADE (MAXIMUM PERCENT)	LENGTH (MILES)	SUMMIT ELEVATION (FEET)	ORIENTATION	ALIGNMENT	CONSTRICTIONS	FLOOD POTENTIAL	DR
								FRE
NEGRO LIZA WASH Hamlin & Escalante, UT.	6(a)	6	6750	NW-SE	Gradual Curves	At Pass & Locally	Low	F
PANCAKE SUMMIT Newark West & Newark East, NV.	4(b)	4	6520	NE-SW	Nearly Straight	None	Low	Sev
PATTERSON Cave & Lake, NV.	10(a)	4	7400	E-W	One or Two Sharp Curves	At Pass & Locally	Low	Sev
PENOYER NORTHWEST Penoyer & Railroad, NV.	3(b)	8	5750	E-W	Gradual Curves	None	Low to Moderate	Num
PINE SOUTH (MILFORD 1A) Pine & Escalante, UT.	4(a)	22	6350	NS-E	Gradual Curves	Locally	Low to Moderate	Sev

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...S	FLOOD POTENTIAL	DRAINAGE CROSSINGS		EXCAVATIONS		OVERALL EVALUATIONS	REMARKS
		FREQUENCY	MAJOR STRUCTURES	DIFFICULTY	GRADING		
	Low	Few	One	Moderate	Moderate	II	Unpaved road. Portions no road. Stream bed running parallel may need channeling and a major structure. Preferred over Modena Draw-difficult grading for 1 mile vs. moderate for 11 miles. 6% grade for only 1 1/2 miles.
	Low	Several	None	Moderate	Light to Moderate	II	Hwy. 50. Rock west of summit. Steep local grades. Good raptor and deer area.
	Low	Several	None	Difficult	Moderate to Heavy	IV	Unpaved road. Rock outcrops. WSA at west side and to north. Grade >8% entire length. Poor DTN pass. Possible service road.
	Low to Moderate	Numerous	None	Moderate	Moderate	II	Unpaved road. East side in badlands requires 2 to 3' cut and fill.
...lly	Low to Moderate	Several	One	Moderate	Light	II	Unpaved road. Some private property. Route DTN to east near Meadow Spring. Rock outcrops at places. Prairie dog on north.

(d) OVERALL EVALUATIONS
- I - EASY
- II - MODERATE
- III - DIFFICULT
- IV - VERY DIFFICULT
- V - AVOID IF POSSIBLE

(e) -BUREAU OF LAND MANAGEMENT (BLM) OWNERSHIP UNLESS STATED
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PASS NAME ______ BETWEEN ______ VALLEY AND ______ VALLEY, STATE	ESTIMATED GRADE (MAXIMUM PERCENT)	LENGTH (MILES)	SUMMIT ELEVATION (FEET)	ORIENTATION	ALIGNMENT	CONSTRICTIONS	FLOOD POTENTIAL	DRAINA
								FREQUEN
PINK KNOLLS (MILFORD 1B) Pine & Escalante, UT.	4(a)	14	6450	SW-W	Gradual Curves	At Pass & Locally	Moderate	Numero
PRUESS LAKE Hamlin & Hamlin, UT.	1(b)	4	5400	N-S	Gradual Curves	At Pass & Locally	Low to Moderate	Severa
QUEEN CITY SUMMIT Railroad & Penoyer, NV.	5(b)	4	5959	NW-SE	Gradual Curves	None	Low	Sever
RAILROAD NORTH Railroad & Newark, NV.	4(b)	4	6580	N-S	Gradual Curves	None	Low	Numer
RED ROCK SUMMIT Railroad & Little Smoky, NV.	4(b)	11	6650	NW-SE	One or Two Sharp Curves	At Pass	Low to Moderate	Seve

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V - AVOID IF

NS	FLOOD POTENTIAL	DRAINAGE CROSSINGS		EXCAVATIONS		OVERALL EVALUATIONS	REMARKS
		FREQUENCY	MAJOR STRUCTURES	DIFFICULTY	GRADING		
	Moderate	Numerous	None	Moderate	Light to Moderate	II	Unpaved road. Joins Jocky Road Pass at west end.
s y	Low to Moderate	Several	None	Moderate	Moderate to Heavy	II	Hwy. 21. Private land in area. Cut slope and fill on bend. Recommended use of existing road-adding one more lane.
	Low	Several	None	Moderate	Moderate	II	Hwy. 25. Mines in area. Nellis Boundary 1 mile to south. Top mile will require 3 to 4' cut and fill to cross drainage.
	Low	Numerous	None	Moderate	Light to Moderate	I	Unpaved road. Mining claims on both sides of road. Minor constriction at pass.
ss	Low to Moderate	Several	One	Moderate	Moderate	II	Unpaved Hwy. 20. Pass is relatively easy except at summit. Heavy cuts to 15'.

(d) OVERALL EVALUATIONS
I - EASY
II - MODERATE
III - DIFFICULT
IV - VERY DIFFICULT
V - AVOID IF POSSIBLE

(e) -BUREAU OF LAND MANAGEMENT (BLM) OWNERSHIP UNLESS OTHERWISE STATED
-BLM WILDERNESS STUDY AREA (WSA)

PASS NAME ____ BETWEEN ____ VALLEY AND ____ VALLEY, STATE	ESTIMATED GRADE (MAXIMUM PERCENT)	LENGTH (MILES)	SUMMIT ELEVATION (FEET)	ORIENTATION	ALIGNMENT	CONSTRICTIONS	FLOOD POTENTIAL	DRAINA FREQUEN
ROBBERS ROOST Long & Butte, NV.	4(c)	6	7100	E-W Horse-Shoe Curve	Gradual Curves	At Pass & Locally	Low to Moderate	Severa
ROSENCRANS Hamlin & Spring, NV.	3(b)	3	6725	NW-SE	Gradual Curves	None	Low	Few
SAMMY SPRINGS Jakes & Long, NV.	4(b)	8	7000	N-S	Gradual Curves	None	Low	Severa
SAND Tule & Fish Springs Flat, UT.	5(a)	1	4750	E-W	Nearly Straight	None	Low	Few
SAND WASH Tule & Tule, UT.	2(b)	3	5700	NW-SE	Gradual Curves	Locally	Moderate	Few

Notes: (a) DATA ESTIMATED FROM 7 1/2' (1:24,000) TOPOGRAPHIC MAP COVERAGE
(b) DATA ESTIMATED FROM 15' (1:62,500) TOPOGRAPHIC MAP COVERAGE
(c) DATA ESTIMATED FROM 2° (1:250,000) TOPOGRAPHIC MAP COVERAGE

(d) OVERALL EVALUA
I - EASY
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FLOOD POTENTIAL	DRAINAGE CROSSINGS		EXCAVATIONS		OVERALL EVALUATIONS	REMARKS
	FREQUENCY	MAJOR STRUCTURES	DIFFICULTY	GRADING		
Low to Moderate	Several	One	Moderate	Moderate	II	Unpaved road. Ranch at summit. Fill required in swale. Shallow rock. Good deer and raptor area. Antelope range at each end.
Low	Few	None	Easy	Light	I	Unpaved road. Wilderness area on south. Key sage grouse and year long antelope range.
Low	Several	None	Easy	Light	I	Unpaved road. 230 KV line parallels road. Minor benching near summit. Deer range.
Low	Few	None	Easy	Light to Moderate	I	Unpaved road. WSA to north. Requires cut - 20' at summit.
Moderate	Few	One	Moderate	Moderate	II	Unpaved road in SE half. Raise road bed above stream channel. Enough room for future road and drainage.

OVERALL EVALUATIONS
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DTN PASS EVALUATION SUMMARY

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

PASS NAME ______ BETWEEN ______ VALLEY AND ______ VALLEY, STATE	ESTIMATED GRADE (MAXIMUM PERCENT)	LENGTH (MILES)	SUMMIT ELEVATION (FEET)	ORIENTATION	ALIGNMENT	CONSTRICTIONS	FLOOD POTENTIAL	DRAI[NAGE] FREQU[ENCY]
SIDEHILL Cave & Muleshoe, NV.	3(a)	2	6140	E-W	Gradual Curves	None	Low	Seve
SILVER KING White River & Muleshoe, NV.	5(a)	4	6400	E-NW	More than Two Sharp Curves	At Pass	Moderate	Nume
SILVER KING NORTH White River & Cave, NV.	4(a)	6	6340	E-W	More than Two Sharp Curves	At Pass	Moderate	Nume
SKULL ROCK Whirlwind & Tule, UT.	4(b)	3	5240	E-W	Gradual Curves	At Pass & Locally	Low	Fe
SNAKE CENTRAL Tule & Tule, UT.	5(b)	3	5700	E-W	More than Two Sharp Curves	At Pass	Moderate	Sev

Notes: (a) DATA ESTIMATED FROM 7 1/2' (1:24,000) TOPOGRAPHIC MAP COVERAGE
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(d) OVERALL EVAL
I - EASY
II - MODERATE
III - DIFFICUL
IV - VERY DIF
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FLOOD POTENTIAL	DRAINAGE CROSSINGS		EXCAVATIONS		OVERALL EVALUATIONS	REMARKS
	FREQUENCY	MAJOR STRUCTURES	DIFFICULTY	GRADING		
Low	Several	None	Easy	Light	I	Unpaved road. Potential for shallow rock. Deer habitat with open pinyon juniper and shrub.
Moderate	Numerous	One	Moderate	Moderate	II	Unpaved road. Steep grade east side. May require benching.
Moderate	Numerous	One	Difficult	Moderate	II	Unpaved road. Wilderness borders west side and 2 miles from pass on north. Campground in the pass area. Raptor, sage grouse, and deer area. High potential antelope designated by state.
Low	Few	One	Moderate	Light	II	Hwy. 6 & 50. Wilderness area north of road. Heavy ripping Tule side.
Moderate	Several	One	Moderate	Moderate	II	Unpaved road. WSA 1 mile along north side of road. Antelope year long range in and around the pass. Good raptor area.

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DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

PASS NAME ______ BETWEEN ______ VALLEY AND ______ VALLEY, STATE	ESTIMATED GRADE (MAXIMUM PERCENT)	LENGTH (MILES)	SUMMIT ELEVATION (FEET)	ORIENTATION	ALIGNMENT	CONSTRICTIONS	FLOOD POTENTIAL	DR FRE
SNAKE WEST Tule & Snake, UT	4(b)	6	5980	NW-SE	Gradual Curves	None	Low	F
STEAMBOAT Whirlwind & Tule, UT.	2(b)	5	5250	E-W	Nearly Straight to Gradual Curves	None	Low	[illegible]
STONE CABIN Stone Cabin East & Stone Cabin West, NV.	1(c)	1.5	5700	E-W	Nearly Straight	None	Low	[illegible]
THE DELL Fish Springs Flat North & South, UT.	4(b)	8	5650	N-S	Gradual Curves	At Pass & Locally	Moderate	Nu
THE TROUGHS Hamlin & Spring, NV.	<1(a)	2	6050	E-W	Nearly Straight	None	Low	S

Notes: (a) DATA ESTIMATED FROM 7 1/2' (1:24,000) TOPOGRAPHIC MAP COVERAGE
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(c) DATA ESTIMATED FROM 2° (1:250,000) TOPOGRAPHIC MAP COVERAGE
(d) OVERALL EV
I - EASY
II - MODERAT
III - DIFFICU
IV - VERY DI
V - AVOID I

FLOOD POTENTIAL	DRAINAGE CROSSINGS		EXCAVATIONS		OVERALL EVALUATIONS	REMARKS
	FREQUENCY	MAJOR STRUCTURES	DIFFICULTY	GRADING		
Low	Few	None	Easy to Moderate	Light	I	Unpaved road. Wilderness area to NE, one short, steep grade at summit. Inside key antelope range.
Low	Few	None	Easy	Light	I	Unpaved road. Long connection for one cluster in Whirlwind Valley.
Low	Few	None	Easy	Light	I	Unpaved road. East half of alignment is BLM, west half is private property.
Moderate	Numerous	One	Moderate	Moderate	III	Unpaved road. Rock outcrops. High mining activity. Dugway pass appears better.
Low	Several	None	Easy	Light	I	Unpaved road. Good pass.

OVERALL EVALUATIONS
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DTN PASS EVALUATION SUMMARY

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PASS NAME ____ BETWEEN ____ VALLEY AND ____ VALLEY, STATE	ESTIMATED GRADE (MAXIMUM PERCENT)	LENGTH (MILES)	SUMMIT ELEVATION (FEET)	ORIENTATION	ALIGNMENT	CONSTRICTIONS	FLOOD POTENTIAL	F
TIMBER MOUNTAIN White River & Coal, NV.	4(a)	5	6080	E-W	Gradual Curves	None	Low to Moderate	Se
TONOPAH Ralston & Big Smoky, NV.	3(b)	6	5800	E-W	Gradual Curves	At Pass & Locally	Low	Nu
TOPAZ Fish Springs Flat & Dugway, UT.	3(b)	3	5360	E-W	Nearly Straight	None	Low	
WAH WAH SUMMIT Wah Wah & Pine, UT.	5(b)	5	6445	E-W	Gradual Curves	At Pass	Low to Moderate	Nu
WAH WAH WASH Wah Wah & Escalante, UT.	2(b)	6	5635	N-S	Nearly Straight	None	Low to Moderate	S

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FLOOD POTENTIAL	DRAINAGE CROSSINGS		EXCAVATIONS		OVERALL EVALUATIONS	REMARKS
	FREQUENCY	MAJOR STRUCTURES	DIFFICULTY	GRADING		
Low to Moderate	Several	None	Moderate	Moderate	II	Unpaved road. Wilderness area to south, cut & fill to east. One section of steep grade, loose gravel. Mining claims in the area.
Low	Numerous	One	Moderate	Light to Moderate	II	Unpaved road in the western half, no access road in the eastern half. Numerous mining claims. Rock outcrops.
Low	Few	None	Easy	Light	I	Paved road east end. Unpaved road west end. Mining area to north.
Low to Moderate	Numerous	One	Moderate	Moderate to Heavy	III	Hwy. 21. Some private land. Wilderness area 1 mile north of pass. Resistant rock. 8% grade to east. Antelope year long range and bald eagle area around pass.
Low to Moderate	Several	One	Easy	Light	I	Unpaved road. Potential site for alunite mine and processing plant. Use alignment out of wash (west side). Bald eagle roost and forage area. Antelope key range to west and southeast approach.

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DTN PASS EVALUATION SUMMARY

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

PASS NAME ______ BETWEEN ______ VALLEY AND ______ VALLEY, STATE	ESTIMATED GRADE (MAXIMUM PERCENT)	LENGTH (MILES)	SUMMIT ELEVATION (FEET)	ORIENTATION	ALIGNMENT	CONSTRICTIONS	FLOOD POTENTIAL	DRAI FREQ
WARM SPRINGS Reveille & Stone Cabin, NV.	3(a)	5	6280	E-W	Gradual Curves	At Pass & East Side	Low	Nume
WATER GAP Garden & Coal, NV.	2(b,	3	5190	E-W	Nearly Straight	None	Moderate	Fe
WELLS STATION SUMMIT White River & Railroad, NV.	4(b)	15	6510	NE-NW	Gradual Curves	At Pass & NW End	Moderate	Seve Num
WORTHINGTON PEAK Garden & Penoyer, NV.	3(b)	6	5870	NE-SW	Gradual Curves	None	Low	F

Notes: (a) DATA ESTIMATED FROM 7 1/2' (1:24,000) TOPOGRAPHIC MAP COVERAGE
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...ONS	FLOOD POTENTIAL	DRAINAGE CROSSINGS		EXCAVATIONS		OVERALL EVALUATIONS	REMARKS
		FREQUENCY	MAJOR STRUCTURES	DIFFICULTY	GRADING		
...ide	Low	Numerous	None	Moderate	Moderate	II	Hwy. 6. Transmission line. Some private property on east side. Cut & fill east end.
...e	Moderate	Few	One	Easy	Light	I	Unpaved road. Minor culverts-large amount of fill required across major drainage.
...ss ...ad	Moderate	Several to Numerous	More than One	Moderate to Difficult	Moderate	II	Unpaved road. Private property near east and west end. Extensive cut and fill at places. Rock outcrops, WSA to south. Good deer and year long antelope range.
...ne	Low	Few	One	Easy	Light	I	Unpaved road. Mining and wilderness area to south. Minor cut & fill.

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DTN PASS EVALUATION SUMMARY

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

30 NOV 81

APPENDIX D

DTN/ASC STUDY CHRONOLOGICAL SUMMARY

#	DATE	Nature of Event	PURPOSE	CONTENTS	REMARKS
1.	10-2-80	Meeting	Shelter layout and DTN review.	- Formalized need for an organized and comprehensive study of DTN that is integrated with the shelter layout program.	- DTN working group formed. - Determined members: SAC, AFRCE, TRW, Ertec, HDR, MMC, RMP, and COE.
2.	10-30-80	Meeting	OB sites and DTN review	- Defined near term and long term objectives.	- Kickoff meeting.
3.	11-19-80	Meeting	DTN Field Reconnaissance planning		
4.	11-24/25 1980	Field Recon.	Evaluate IOC-DTN	- Reconnoitered IOC DTN, also evaluated passes in Utah.	
5.	12-2-80	Meeting	Review DTN requirements	- Reviewed the results of previous DTN field trip and planned the next DTN field trip. Reviewed DTN requirements.	
6.	12-7/12 1980	Field Recon.	Review critical passes and proposed ASC locations, gather additional f. ld data.	- Reconnoitered Nevada-Utah study area, evaluated 32 passes, mostly in eastern, central and northwestern part of the study area.	-A representative from each member DTN working group participated in field recon.
7.	12-17/19 1980	Field Recon.	Review critical passes and proposed ASC locations, gather additional field data.	- Reconnoitered mostly central, and portions of northwestern part of the study area, evaluated 12 passes.	
8.	1-20-81	Meeting	DTN Routing	- Reviewed the results of DTN field reconnaissance trips made in December 1980. - Reviewed the first 360 miles of DTN routing resulting from the field trips.	- Delamar "A" Pass was agreed as connection from Coyote OB to DDA. - Pine Valley road was the agreed Beryl/Milford (south) OB to DDA connection.
9.	2-2/6-81	Field Recon.	Review the east-west legs of DTN.	- Reconnoitered northeastern and western part of the study area. Evaluated 7 passes.	- All planned field work completed for first 360 miles.

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DTN/ASC STUDY CHRONOLOGICAL SUMMARY

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

30 NOV 81

#	DATE	Nature of Event	PURPOSE	CONTENTS	REMARKS
10.	2-9-81	Meeting	DTN Siting	- Reviewed and approved first 360 miles of DTN routing with corridor widths.	
11.	2-16-81		DTN routing maps	Submitted first 360 miles of DTN routing maps (1:62,500-21 sheets) to AFRCE	
12.	3-10-81	Meeting	Review the action items from previous meetings.		- Timber mountain pass preferred as DTN connection from White River to Coal Valley. - Three of the four ASC locations were finalized i.e. ASCs in Muleshoe, Stone Cabin, and Newark Valleys. - Land withdrawal drawings to be submitted on "E" size drawings.
13.	3-23/26 1981	Field Recon.	Review Utah deployment area.	- Reconnoitered Snake, Tule and Whirlwind Valleys DTN, evaluated proposed Tule ASC location and different DTN options for Milford (south) MOB #1.	
14.	4-8-81	Meeting	Review of past action items.	- Outlined final DTN siting report requirements. Presented Snake and Tule DTN and Tule and Whirlwind ASCs.	- Milford option 1B was dropped from consideration.
15.	5-11/14 1981	Field Recon.	OBTS siting field studies.	- Evaluated possible DTN passes from Escalante Desert to Pine and Hamlin valleys.	
16.	5-19-81	Final Map		- Submitted optimized DTN routing and four ASC locations on 1:500,000 and 1:62,500 maps dated 5-15-81	
17.	5-27-81	Meeting	Final DTN alignment and ASC sites review	- Presented the realignments of DTN and ASC locations as shown on 15 May 1981 maps. - Also presented the revised regional map and requested comment from the group.	

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DNT/ASC STUDY CHRONOLOGICAL SUMMARY

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

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No.		Nature of Event	PURPOSE	COMMENTS	REMARKS
18.	6-15/19 1981	Field Recon.	Review final DTN alignment.	- Field checked the final alignments to DTN and the ASC locations, also evaluated 7 more passes not covered before.	
19.	8-16-81	Deliverable	DTN alignment in support of Tier IIA	- Provided 1:62,500 maps of DTN between MOB options and through the IOC valleys.	
20.	8-10-81	Map Revision		- Modified DTN alignment in northeastern part of study area. - Added Milford Central OB option and OBTS locations.	
21.	9-1-81	Map Revision		- Revised DTN alignment in Pine valley for Utah OBs options.	
22.	9-13-81	Meeting	Land Acquisition "E" size drawings delivery	- Presented final results of DTN/ASC working group for total system as well as IOC and all MOB options - DTN was revised in the area of Pine/Wah Wah valleys as per comments received during State process.	- Marks formal end to 5200 ft MPS/DTN/ASC layout activity. Any additional work represents revision to the basic system. Revision will be forthcoming during the state siting review process.

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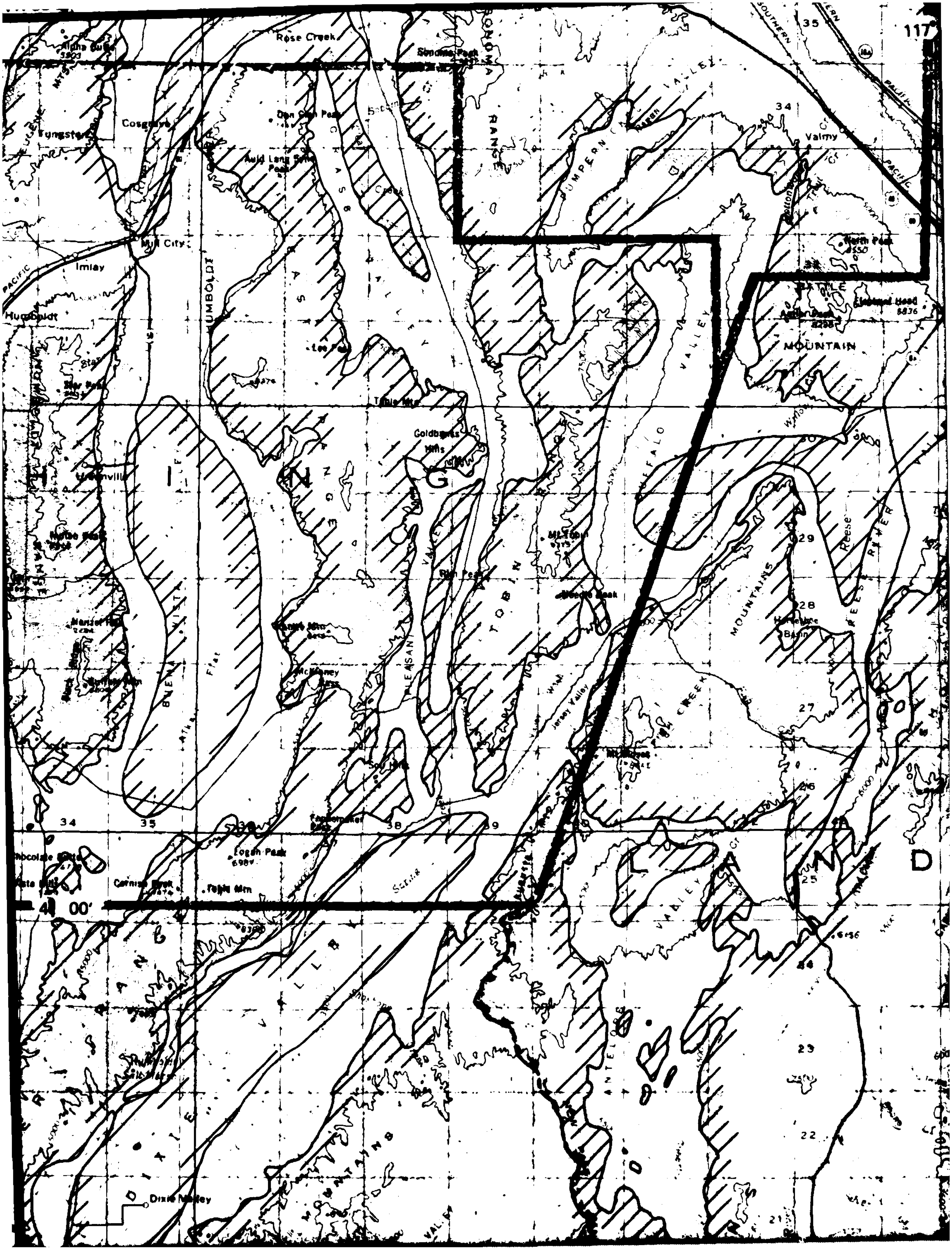
DTN/ASC STUDY CHRONOLOGICAL SUMMARY

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

30 NOV 81



Rose Creek
Sonoma Peak
Cosgrave
Tungsten
Mill City
Imlay
Humboldt
HUMBOLDT
PACIFIC
Valmy
North Peak
BATTLE
MOUNTAIN
Antler Peak
Table Mtn
Goldbanks
Star Peak
Unionville
Jersey Valley
TOBIN
BUFFALO
VALLEY
MOUNTAINS
REESE RIVER
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Cornish Peak
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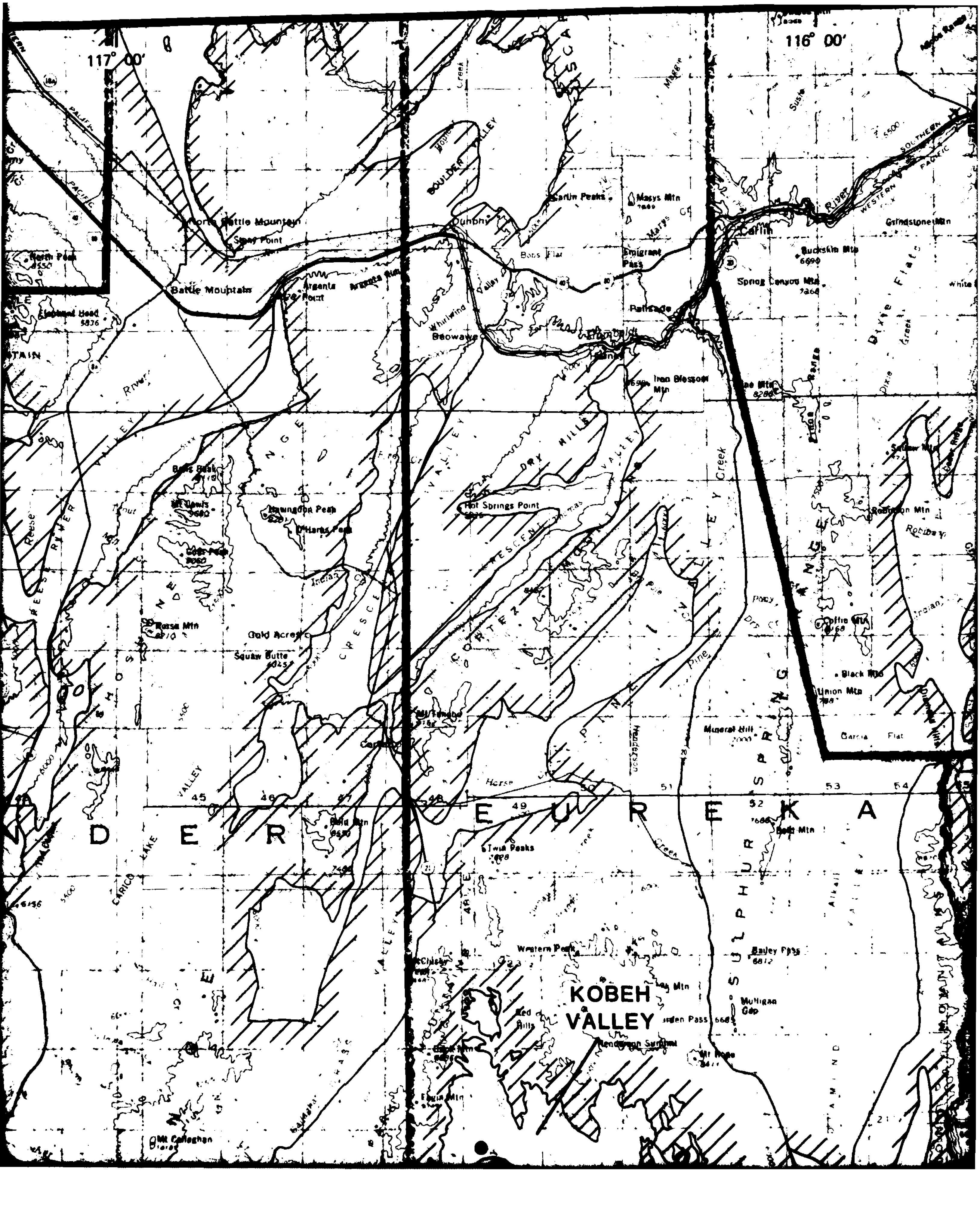

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North Battle Mountain
Battle Mountain
Argenta
Dunphy
Beowawe
Carlin Peaks
Carlin
Palisade
Emigrant Pass
Buckskin Mtn
Spring Canyon Mtn
Grindstone Mtn
Iron Blossom Mtn
Hot Springs Point
Bald Mtn
Squaw Butte
Gold Acres
Mt Tenabo
Twin Peaks
Western Peak
Mineral Hill
Bailey Pass
Mulligan Gap
Union Mtn
Black Mtn
Coffin Mtn
Robinson Mtn
KOBEH VALLEY
Red Hills
Mt Callaghan
Eagle Mtn
Mt Hope
BOULDER VALLEY
DRY HILLS
CRESCENT VALLEY
CORTEZ
PINE VALLEY
SULPHUR SPRING
REESE RIVER VALLEY
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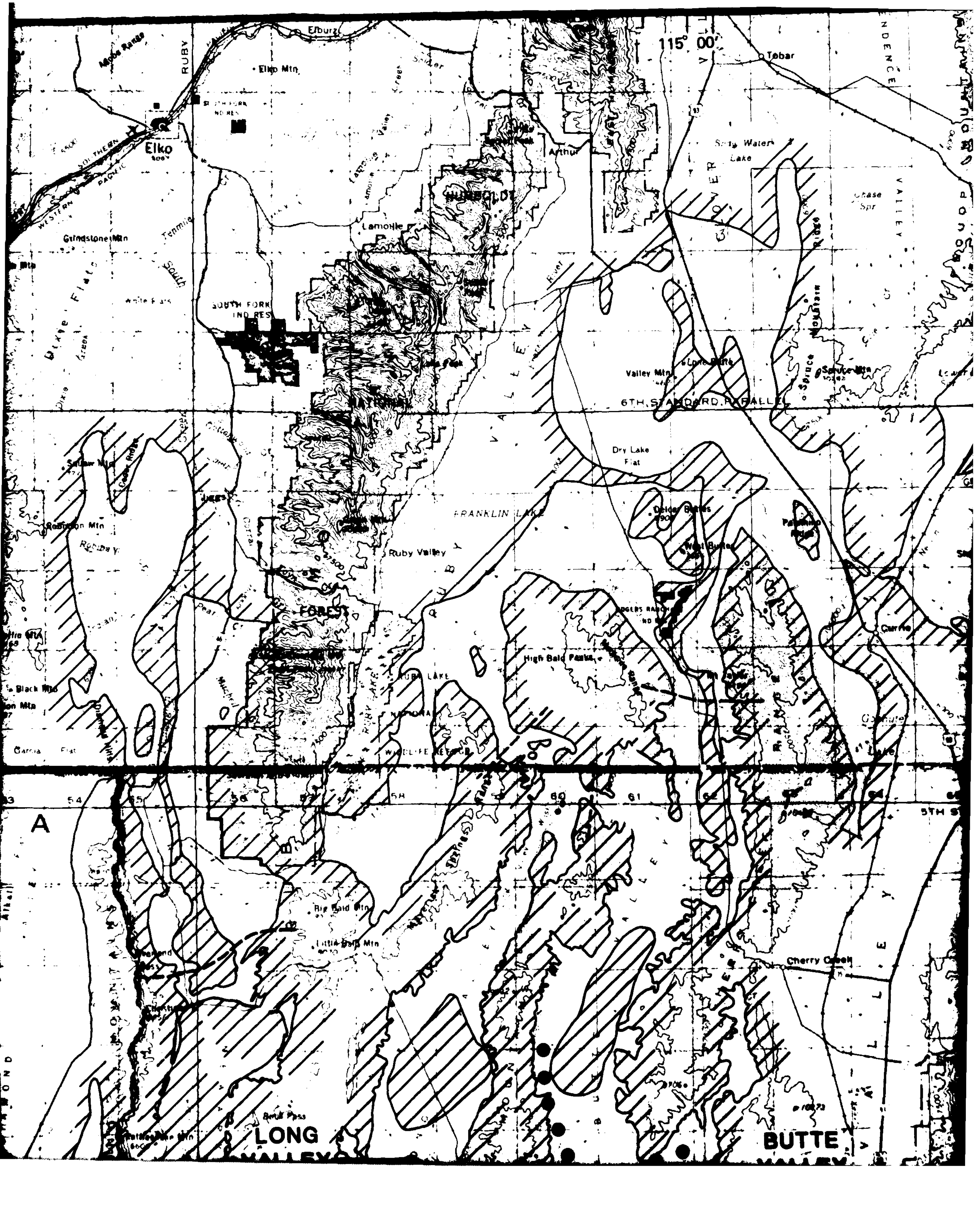

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Elburz
Elko Mtn
Elko
Arthur
Lamoille
HUMBOLDT
NATIONAL
FOREST
Grindstone Mtn
SOUTH FORK IND RES
Dixie Flats
Valley Mtn
Lone Butte
Spruce Mtn
6TH STANDARD PARALLEL
Dry Lake Flat
FRANKLIN LAKE
Ruby Valley
RUBY LAKE
NATIONAL WILDLIFE REFUGE
High Bald Peaks
Robinson Mtn
Black Mtn
Garcia Flat
Big Bald Mtn
Little Bald Mtn
Cherry Creek
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BUTTE
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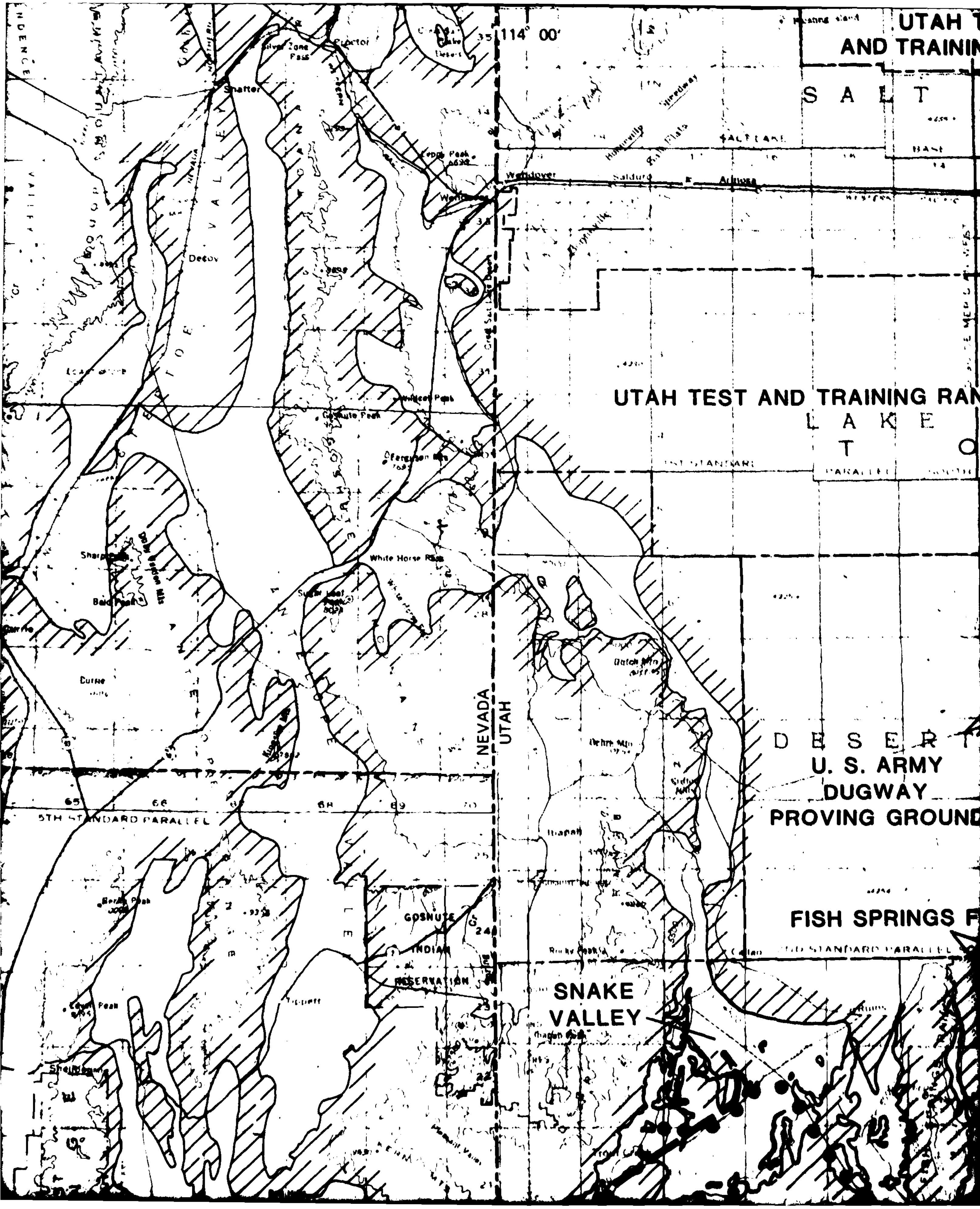

114° 00'
UTAH TEST AND TRAINING
SALT
UTAH TEST AND TRAINING RAN
LAKE
DESERT
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DUGWAY
PROVING GROUND
FISH SPRINGS
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UTAH
SNAKE
VALLEY
GOSHUTE
INDIAN
RESERVATION
Wendover
Shafter
Decoy
White Horse Pass
Sharp Peak
Bald Peak
Currie
5TH STANDARD PARALLEL
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66
68
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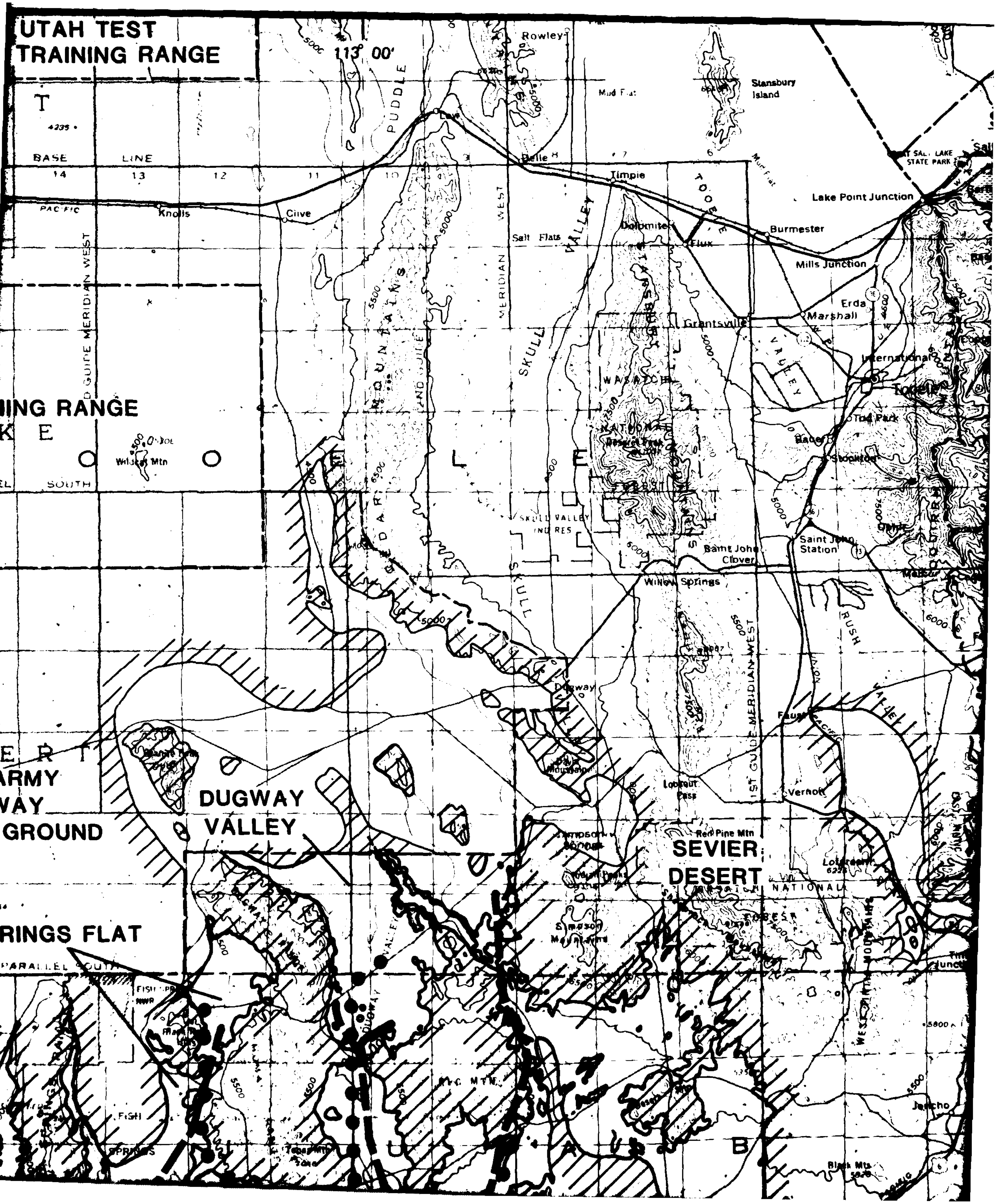
Ibapah
Rocky Peak
Callao


UTAH TEST
TRAINING RANGE
113° 00'
Rowley
Stansbury Island
Mud Flat
PUDDLE
BASE LINE
Knolls
Clive
Timpie
Lake Point Junction
Dolomite
Flux
Burmester
Mills Junction
Salt Flats
Erda
Marshall
Grantsville
SKULL
VALLEY
International
Tooele
WASATCH NATIONAL
NING RANGE
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Wildcat Mtn
SOUTH
MERIDIAN WEST
Bauer
Stockton
Skull Valley Ind Res
Saint John
Clover
Saint John Station
Willow Springs
RUSH
Dugway
1ST GUIDE MERIDIAN WEST
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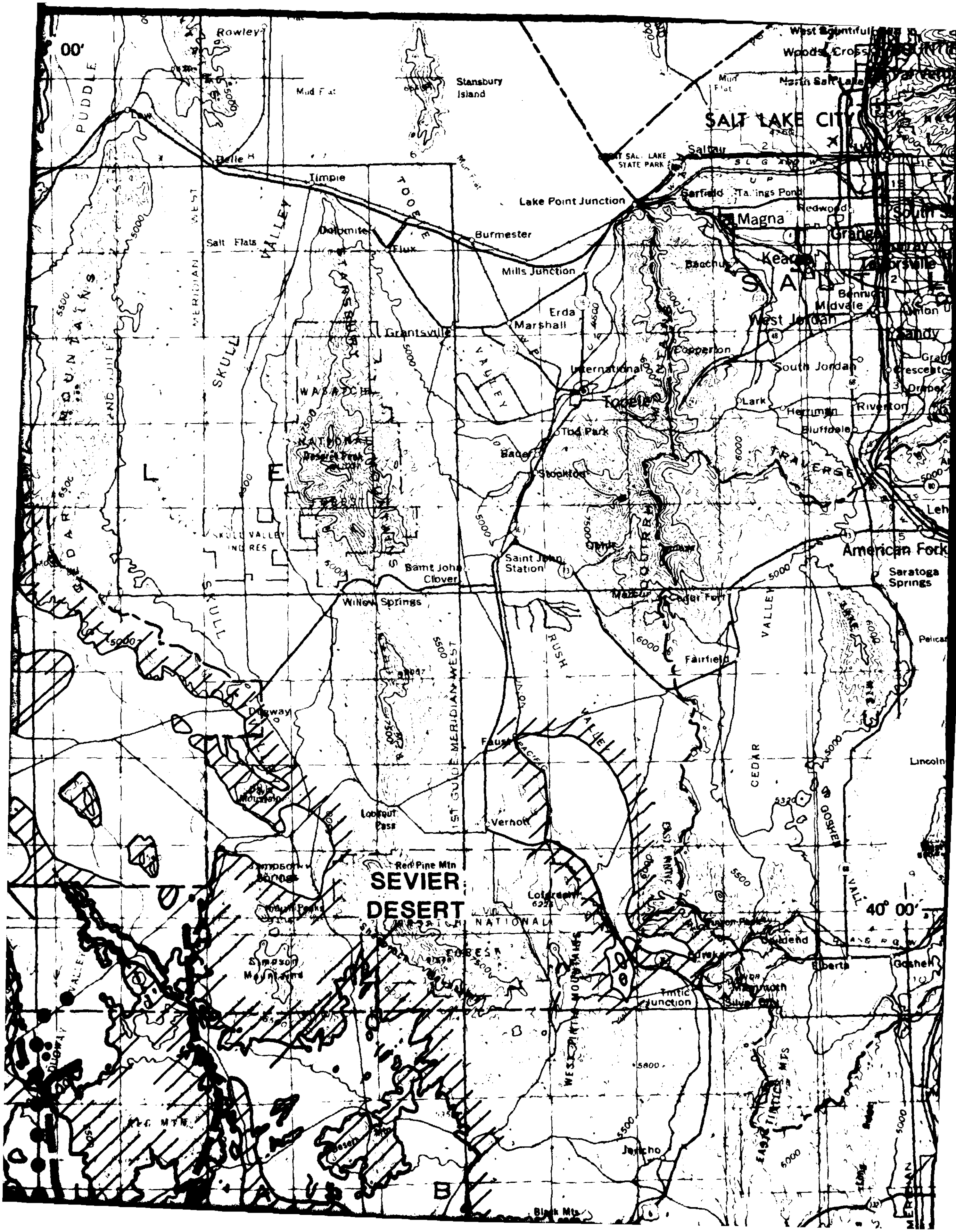
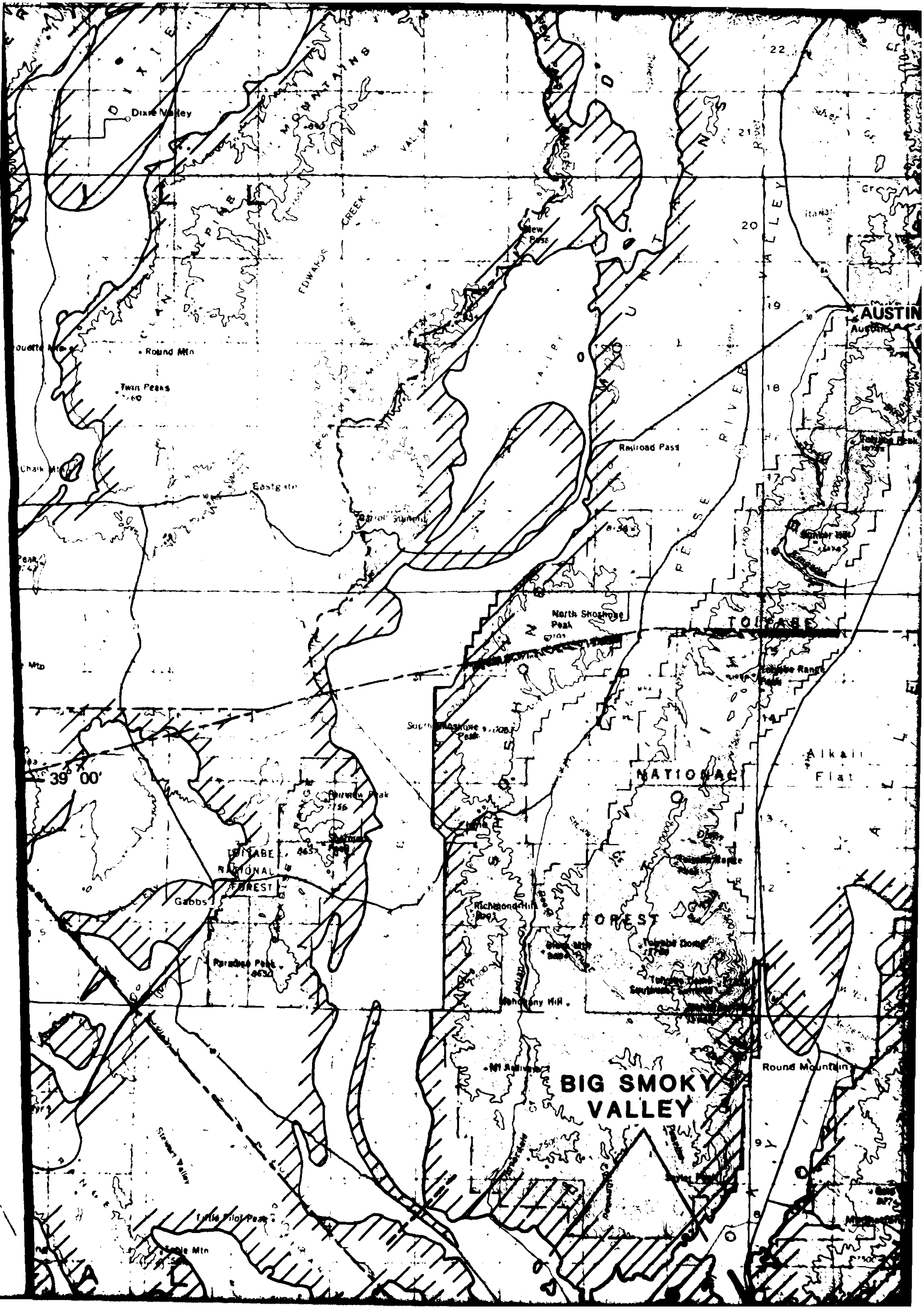
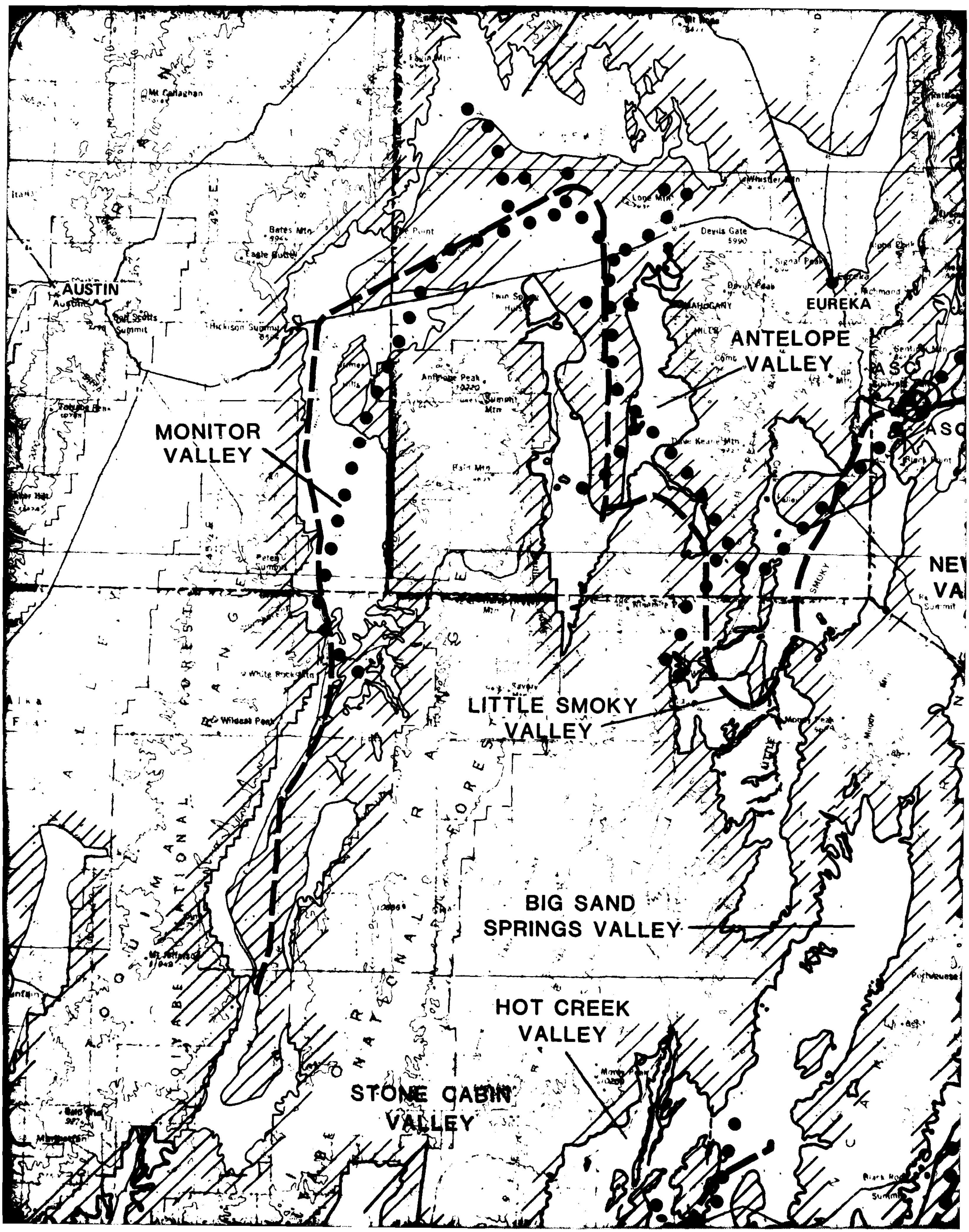
ARMY
WAY
GROUND
DUGWAY
VALLEY
Lookout Pass
Vernon
Faust
Red Pine Mtn
SEVIER
DESERT
Simpson Mountains
NATIONAL
FOREST
PRINGS FLAT
PARALLEL SOUTH
FISH SPRINGS
NWR
Jericho
Black Mts



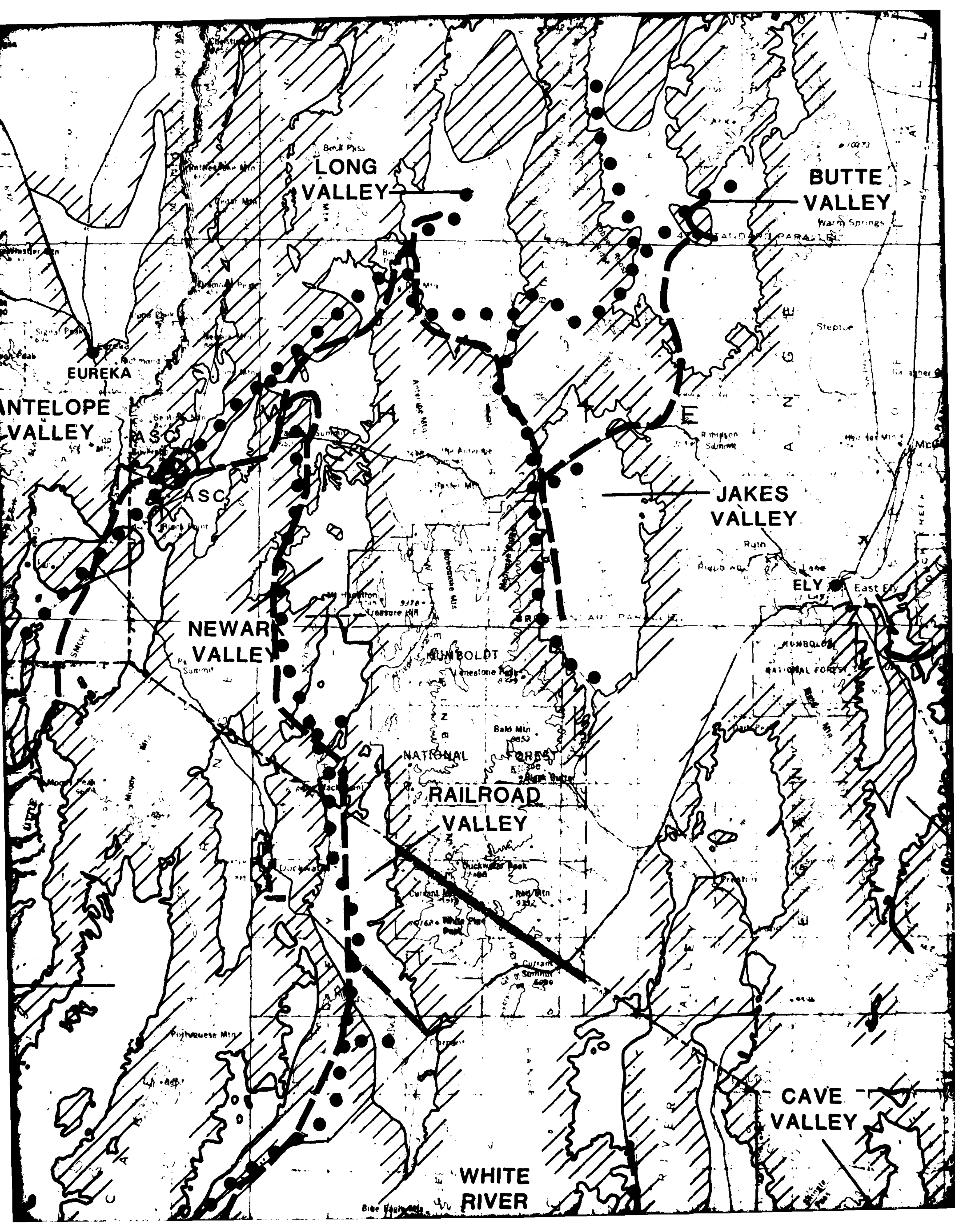
00′
Rowley
Stansbury Island
Mud Flat
West Bountiful
Woods Cross
North Salt Lake
SALT LAKE CITY
Saltair
SALT LAKE STATE PARK
Lake Point Junction
Garfield
Tailings Pond
Magna
Redwood
Granger
Kearns
Bacchus
Timpie
Dolomite
Flux
Burmester
Mills Junction
Salt Flats
Grantsville
Erda
Marshall
International
Tooele
Copperton
West Jordan
Midvale
South Jordan
Sandy
Lark
Herriman
Riverton
Bluffdale
Draper
Crescent
Tod Park
Bauer
Stockton
SKULL VALLEY
TOOELE VALLEY
WASATCH NATIONAL
Deseret Peak
SKULL VALLEY IND RES
Saint John Station
Saint John
Clover
Willow Springs
American Fork
Saratoga Springs
RUSH
Fairfield
CEDAR VALLEY
Dugway
Faust
1ST GUIDE MERIDIAN WEST
Lookout Pass
Vernon
Red Pine Mtn
SEVIER DESERT
Simpson Mountains
Tintic Junction
Silver City
Elberta
Goshen
Lincoln
40° 00′
Jericho
Black Mts
B

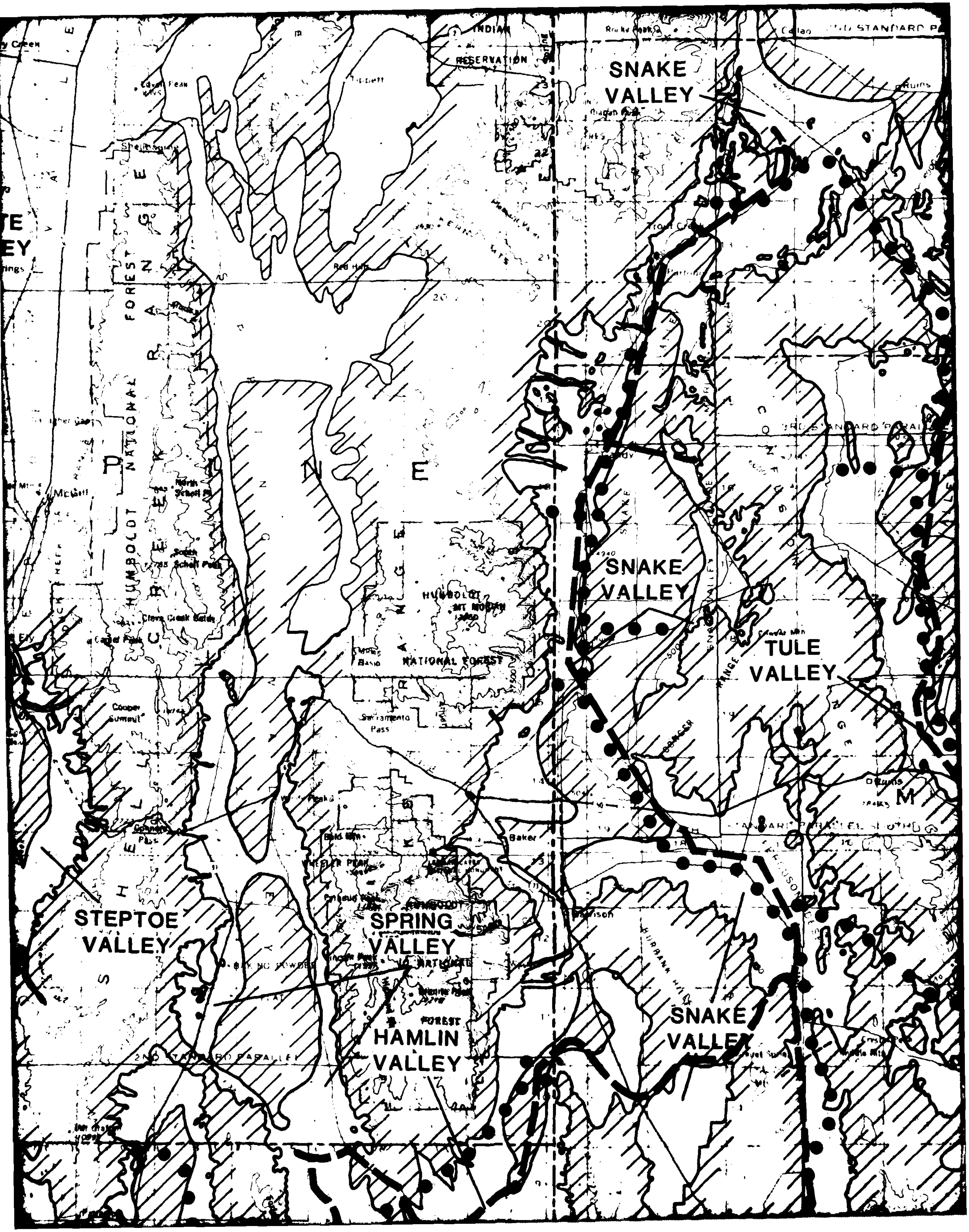


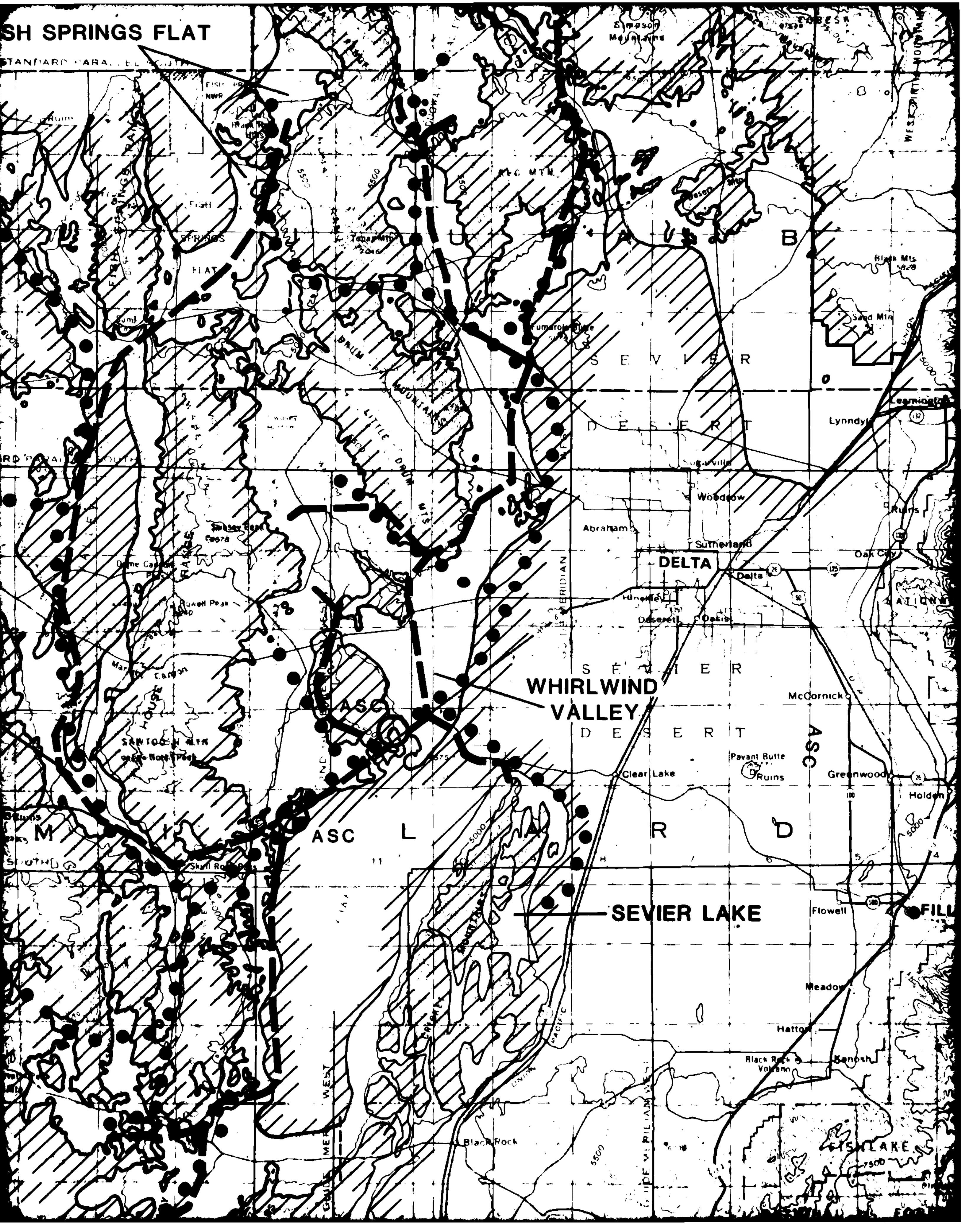
Dixie Valley
MOUNTAINS
EDWARDS CREEK
New Pass
Round Mtn
Twin Peaks
Chalk Mtn
Eastgate
Railroad Pass
AUSTIN
Austin
North Shoshone Peak
TOIYABE
South Shoshone Peak
NATIONAL
Alkali
Flat
39° 00'
Fairview Peak
TOIYABE
NATIONAL
FOREST
Gabbs
Paradise Peak
Richmond Hill
FOREST
Toiyabe Dome
Mahogany Hill
Round Mountain
BIG SMOKY
VALLEY
Stewart Valley
Sable Mtn



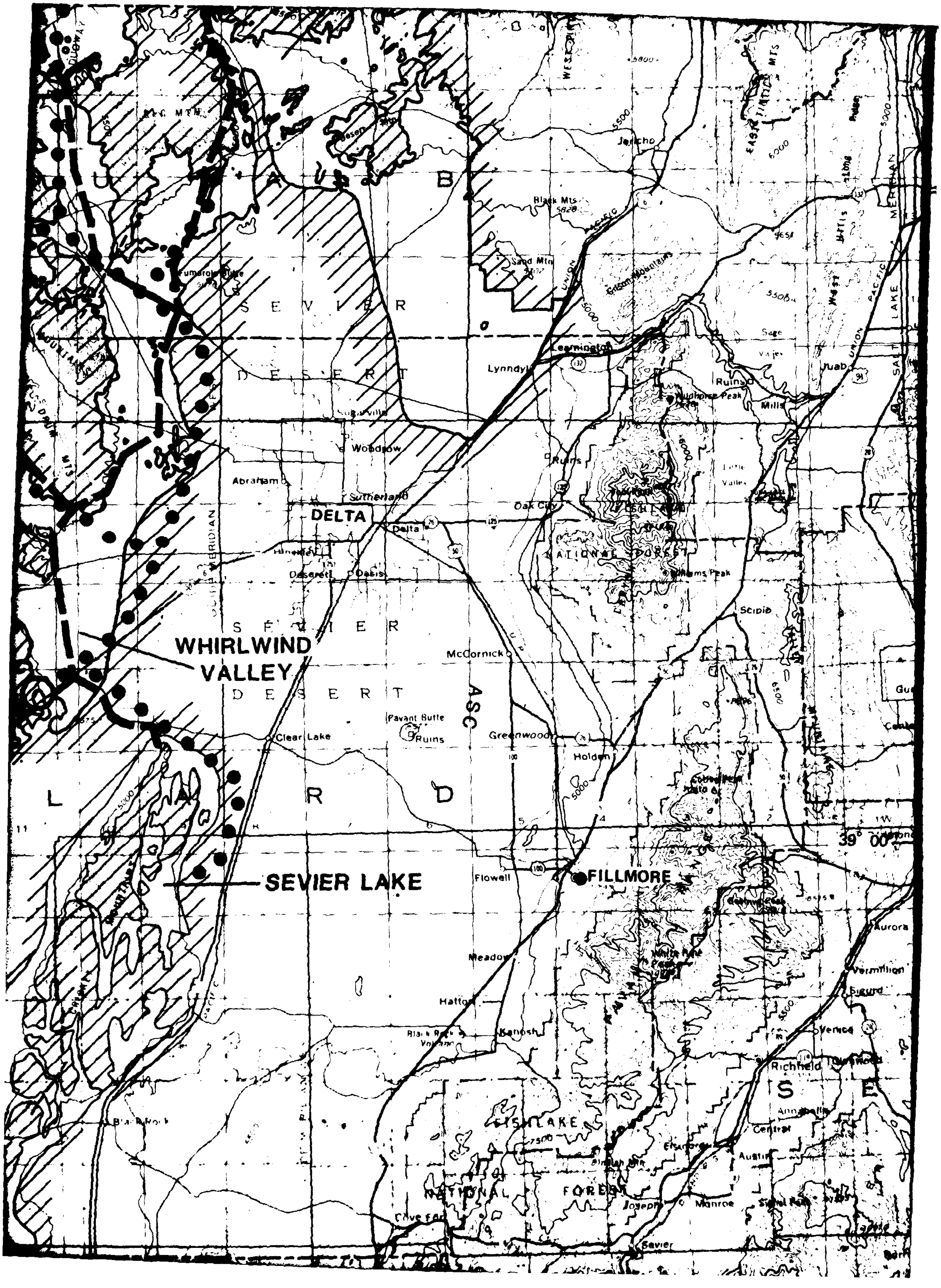
AUSTIN
EUREKA
ANTELOPE VALLEY
MONITOR VALLEY
LITTLE SMOKY VALLEY
BIG SAND SPRINGS VALLEY
HOT CREEK VALLEY
STONE CABIN VALLEY

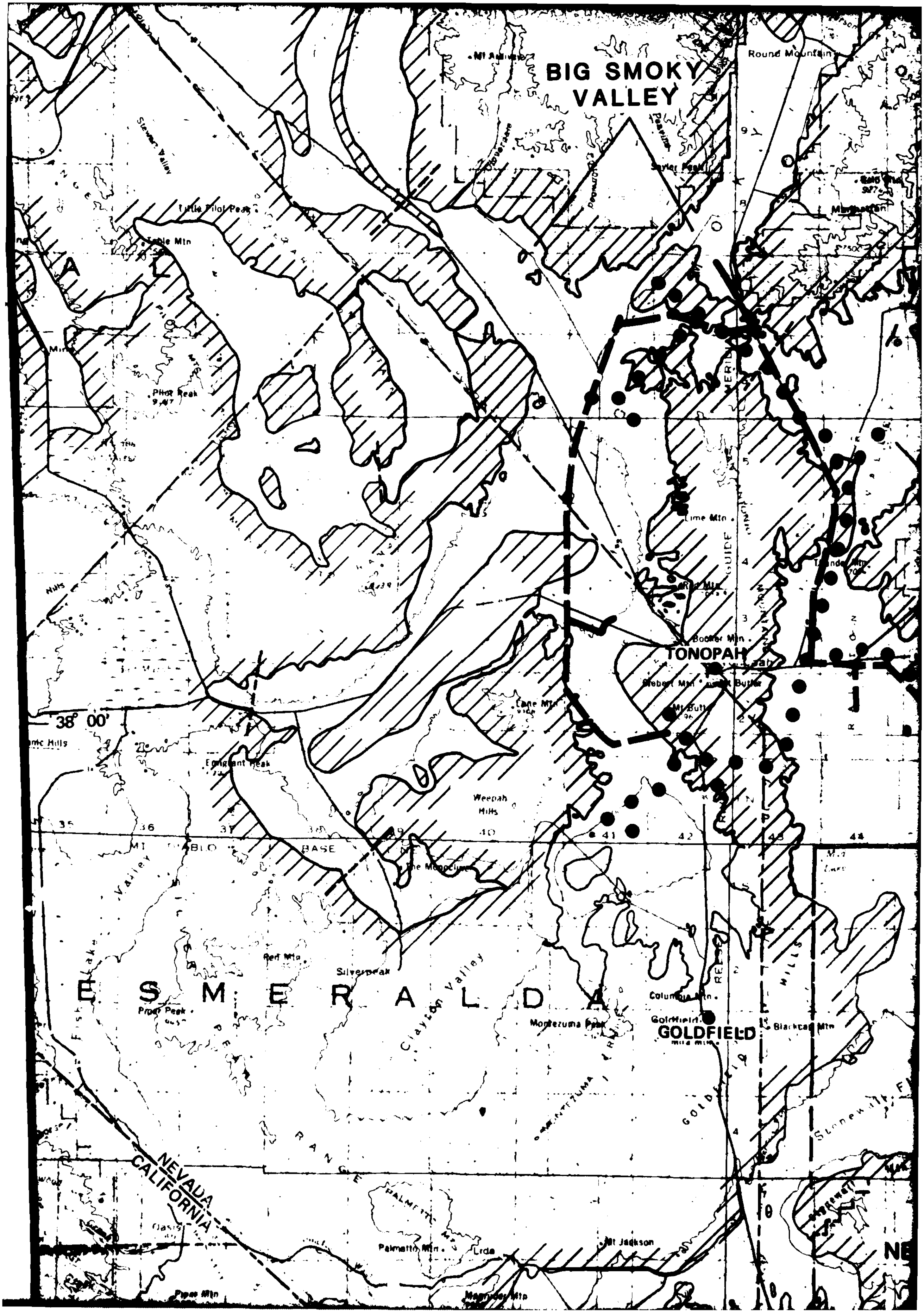

LONG VALLEY
BUTTE VALLEY
EUREKA
ANTELOPE VALLEY
JAKES VALLEY
ELY
NEWARK VALLEY
RAILROAD VALLEY
CAVE VALLEY
WHITE RIVER

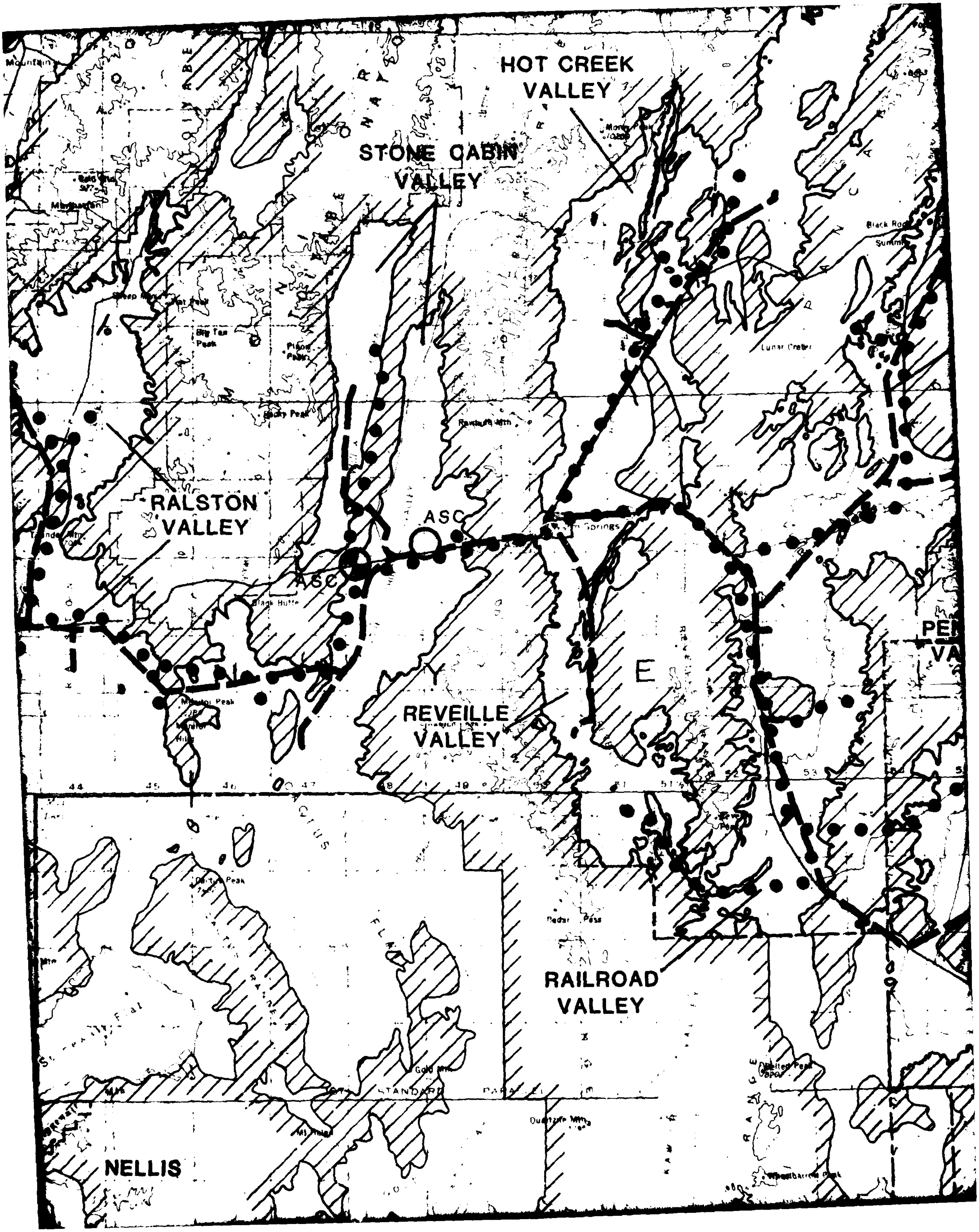

SNAKE VALLEY
SNAKE VALLEY
TULE VALLEY
STEPTOE VALLEY
SPRING VALLEY
HAMLIN VALLEY
SNAKE VALLEY
INDIAN RESERVATION
HUMBOLDT NATIONAL FOREST
SCHELL CREEK RANGE
SNAKE RANGE
HUMBOLDT NATIONAL FOREST
Sacramento Pass
Baker
Garrison
3RD STANDARD PARALLEL
2ND STANDARD PARALLEL

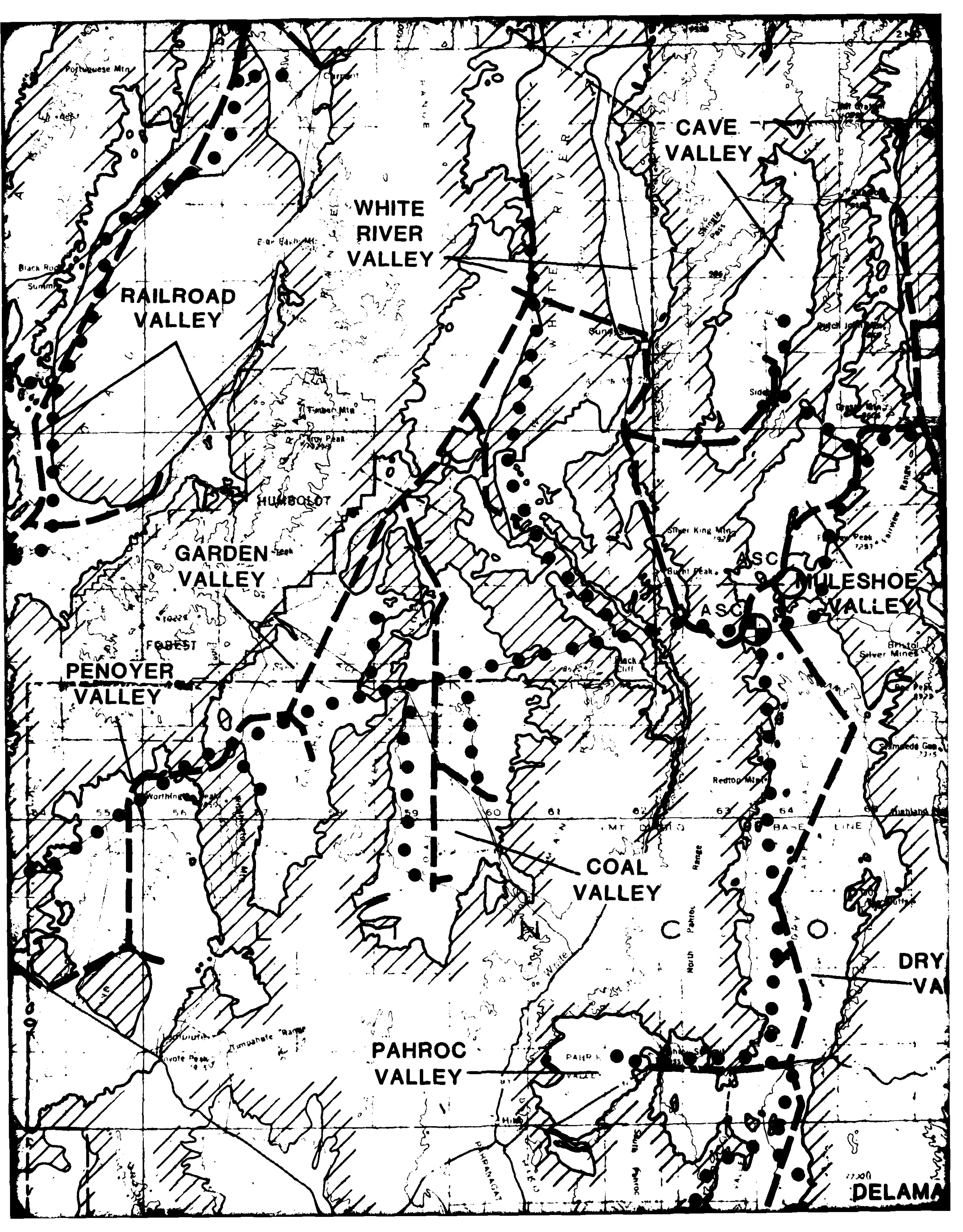


SH SPRINGS FLAT
STANDARD PARALLEL SOUTH
Topaz Mtn
FLAT
SPRINGS
Fumarole Butte
S E V I E R
D E S E R T
B
Black Mts
Sand Mtn
Leamington
Lynndyl
Sugarville
Woodrow
Abraham
Sutherland
DELTA
Delta
Oak City
Hinckley
Deseret
Oasis
Swasey Peak
Notch Peak
LITTLE DRUM MTS
DRUM MOUNTAINS
HOUSE RANGE
Marjum Canyon
WHIRLWIND
VALLEY
S E V I E R
D E S E R T
McCornick
ASC
Clear Lake
Pavant Butte
Ruins
Greenwood
Holden
M
ASC
L
A
R
D
Skull Rock Pass
SEVIER LAKE
Flowell
Meadow
Hatton
Black Rock Volcano
Kanosh
Black Rock
5500
5000
UNION PACIFIC

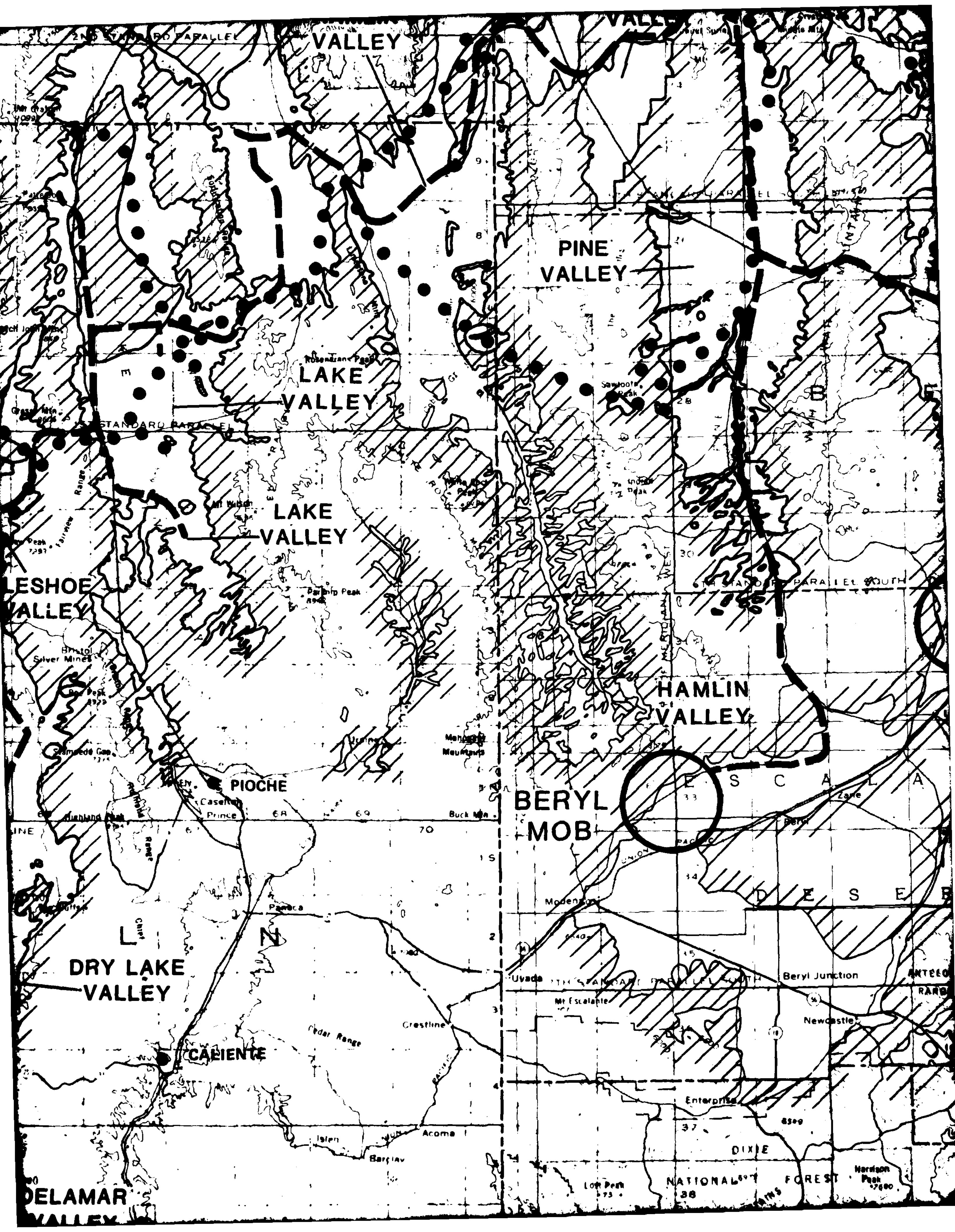

WHIRLWIND
VALLEY
SEVIER LAKE
DELTA
FILLMORE
SEVIER
DESERT
SEVIER
DESERT
L A R D
S E
Jericho
Black Mts
Sand Mtn
Leamington
Lynndyl
Juab
Mills
Woodrow
Abraham
Sutherland
Delta
Oak City
Hinckley
Deseret
Oasis
NATIONAL FOREST
Scipio
McCornick
Clear Lake
Pavant Butte
Ruins
Greenwood
Holden
Flowell
Meadow
Hatton
Kanosh
Black Rock
FISHLAKE
NATIONAL
FOREST
Joseph
Monroe
Sevier
Richfield
Aurora
Vermillion
Sigurd
Venice
Annabella
Central
Austin
Elsinore
Cove Fort
39° 00'
MERIDIAN
UNION PACIFIC
Fumarole Butte
5000
5500
6000


BIG SMOKY VALLEY
Round Mountain
Mt Airy
Sayler Peak
Manhattan
Little Pilot Peak
Table Mtn
Pilot Peak
Lime Mtn
Red Mtn
Booker Mtn
TONOPAH
Siebert Mtn
Butler
Mt Butler
Lone Mtn
Weepah Hills
Emigrant Peak
38° 00'
35
36
37
38
39
40
41
42
43
44
MT DIABLO BASE
The Monocline
Red Mtn
Silverpeak
Clayton Valley
E S M E R A L D A
Piper Peak
Columbia Mtn
Montezuma Peak
Goldfield
GOLDFIELD
Blackcap Mtn
Stonewall
NEVADA
CALIFORNIA
Oasis
Palmetto Mtn
Lida
Mt Jackson
Magruder Mtn
Piper Mtn
GUIDE
MERIDIAN

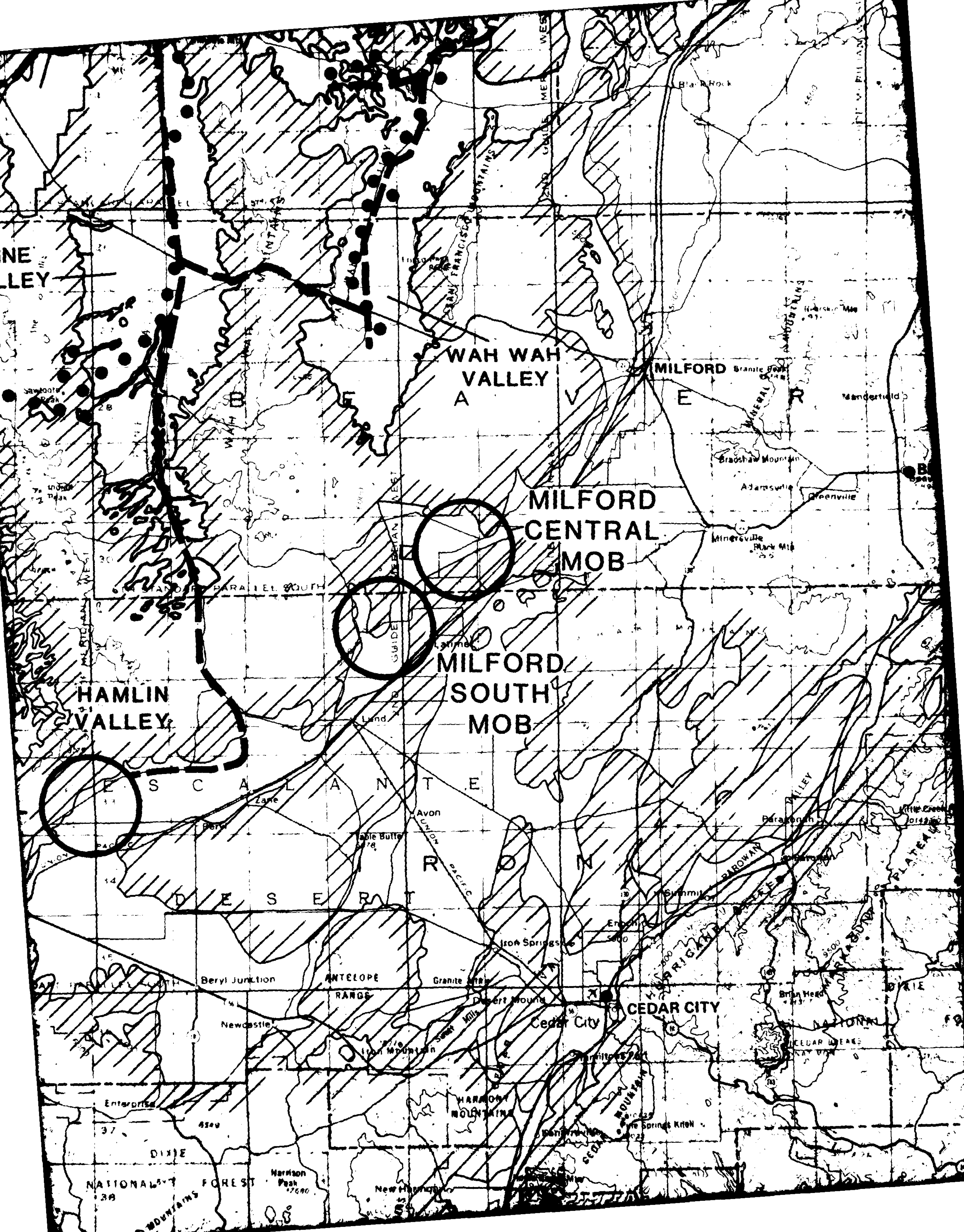

HOT CREEK VALLEY
STONE CABIN VALLEY
RALSTON VALLEY
ASC
ASC
REVEILLE VALLEY
E
RAILROAD VALLEY
NELLIS
PE
VA
Black Rock Summit
Lunar Crater
Warm Springs
Black Butte
Monitor Peak
Monitor Hills
Big Ten Peak
Cedar Pass
Gold Mtn
Quartzite Mtn
Wheelbarrow Peak
STANDARD
Sheep Mtn
Rocky Peak
Pinon Peak
44
45
46
47
48
49
50
51
52
53

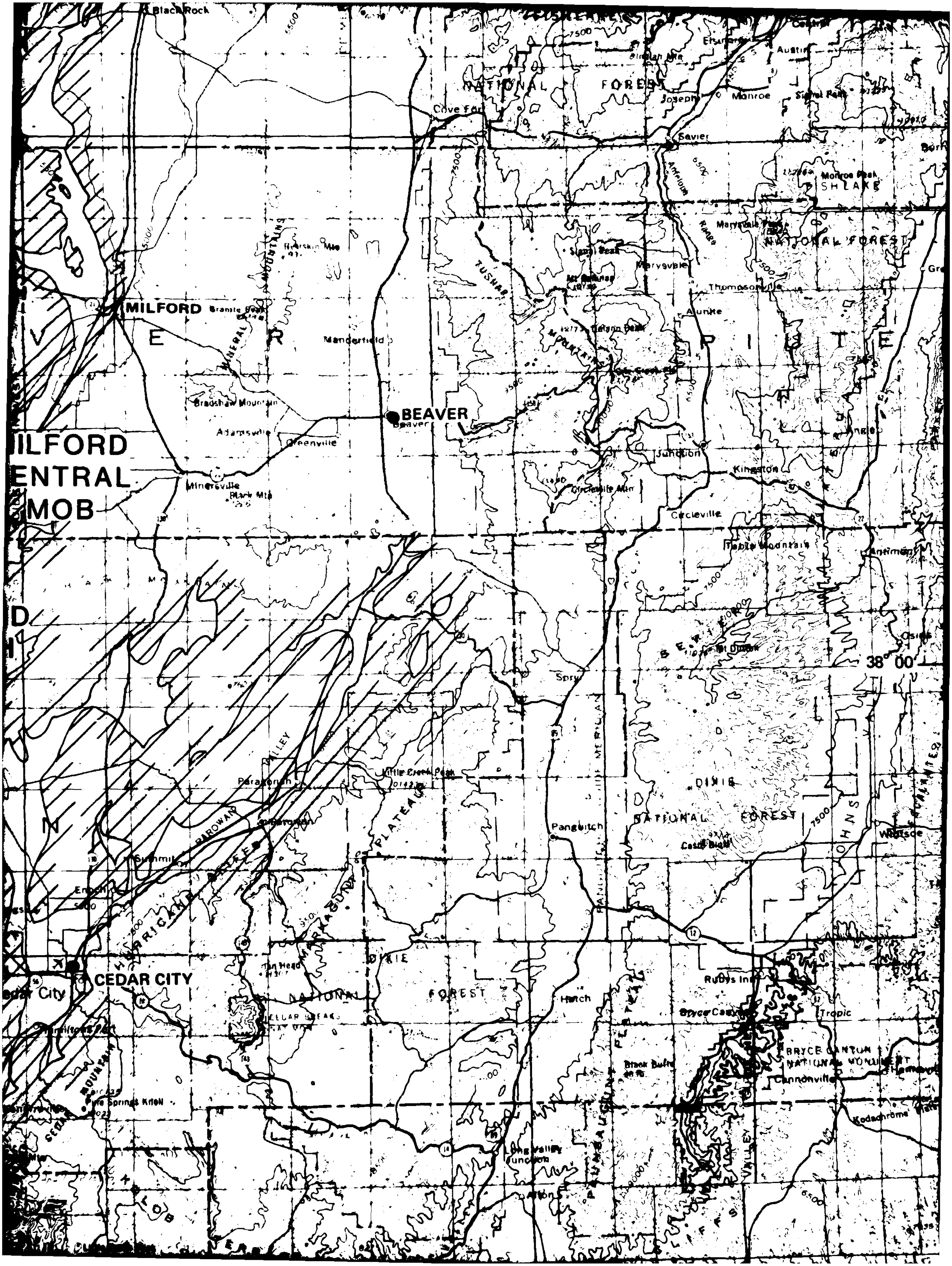


CAVE VALLEY
WHITE RIVER VALLEY
RAILROAD VALLEY
GARDEN VALLEY
PENOYER VALLEY
MULESHOE VALLEY
COAL VALLEY
DRY VA
PAHROC VALLEY
DELAMA
HUMBOLDT

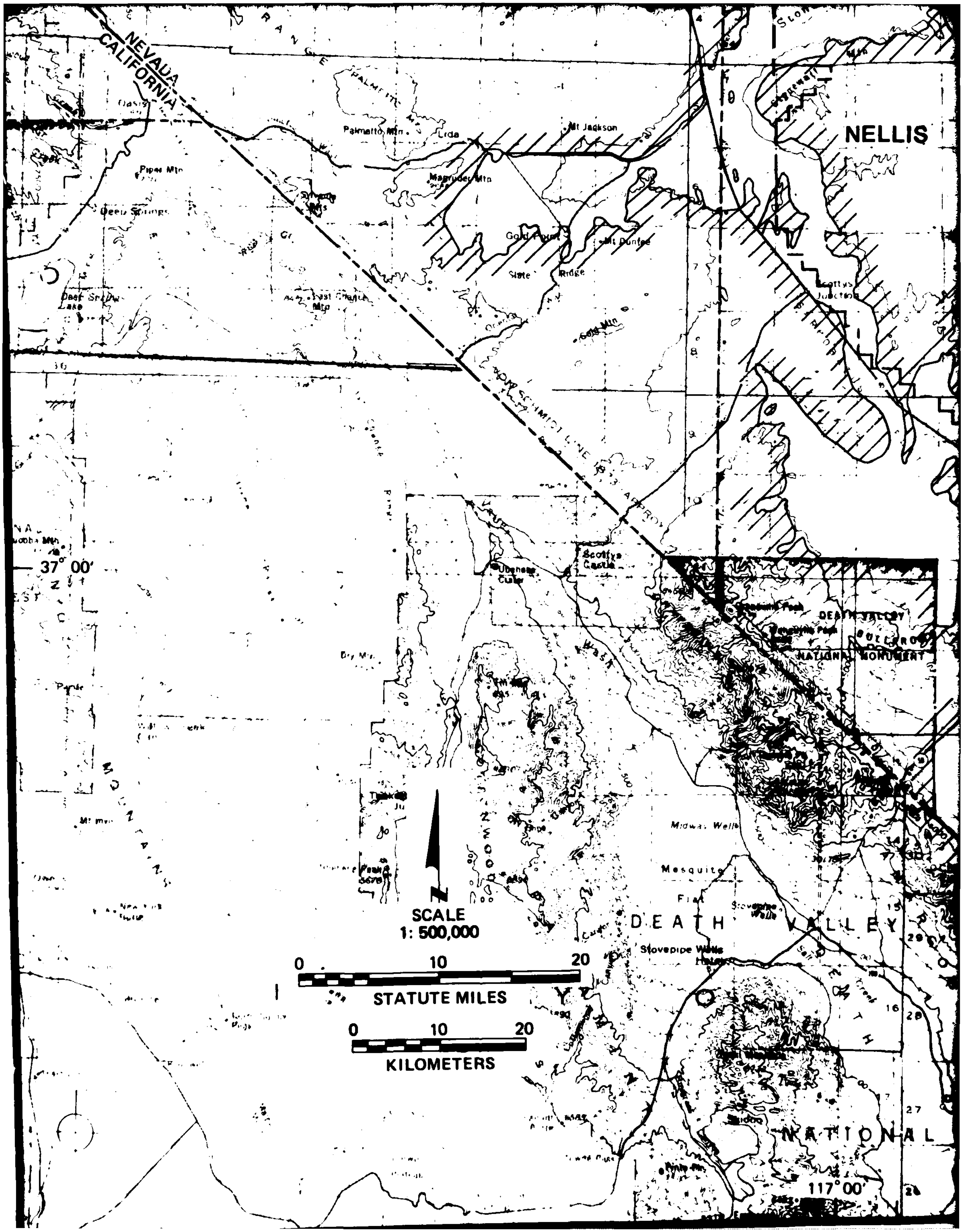


VALLEY
PINE
VALLEY
LAKE
VALLEY
LAKE
VALLEY
LESHOE
VALLEY
HAMLIN
VALLEY
PIOCHE
BERYL
MOB
DRY LAKE
VALLEY
CALIENTE
DELAMAR
Rosencrans Peak
Parsnip Peak
Sawtooth Peak
Bristol
Silver Mines
Caselton
Prince
Highland Peak
Buck Mtn
Panaca
Modena
Uvada
Mt Escalante
Beryl Junction
Newcastle
Enterprise
Crestline
Cedar Range
Acoma
Barclay
Islen
Lost Peak
DIXIE
NATIONAL
FOREST
Zane
Beryl
E S C A L A
D E S E
L
N

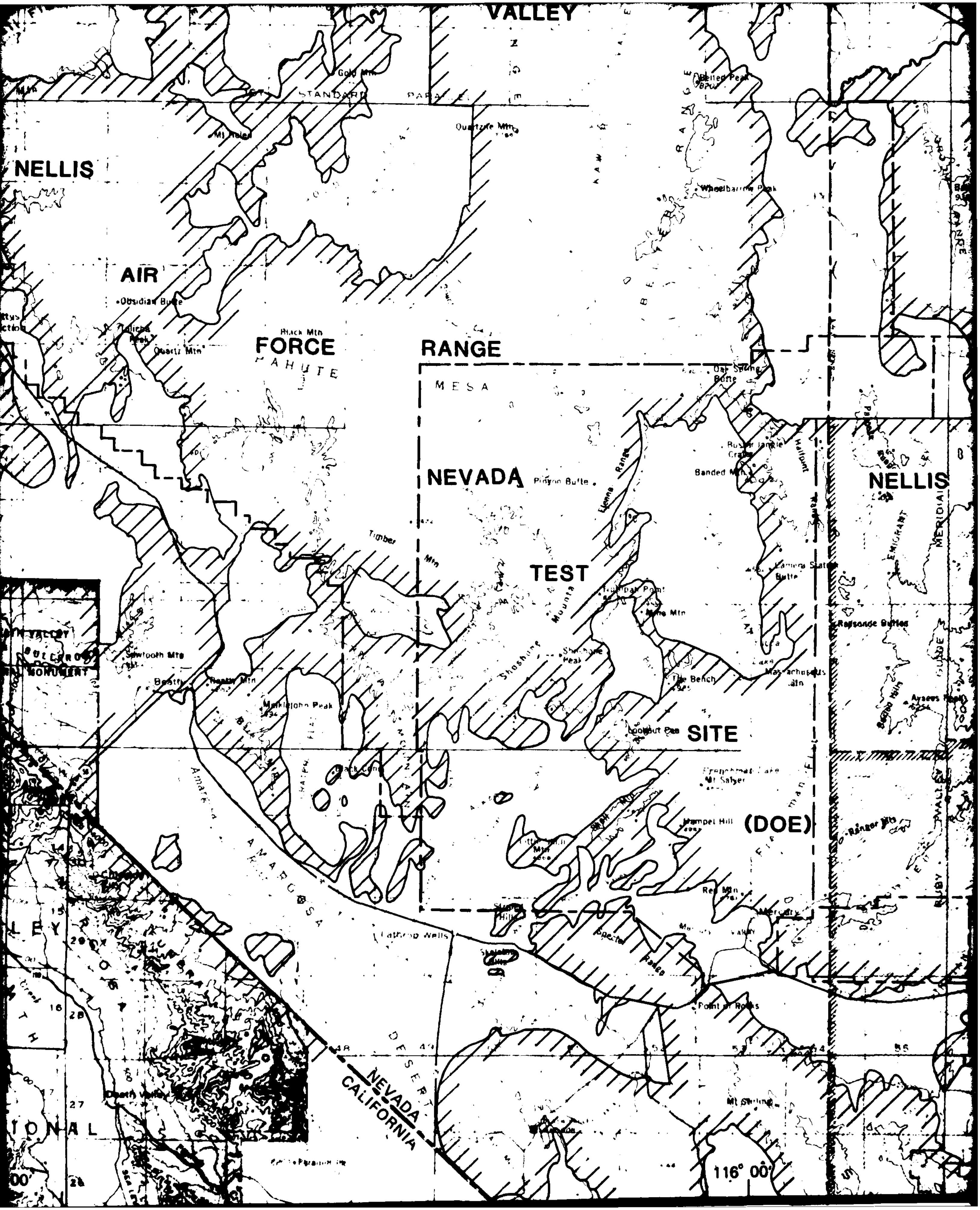

WAH WAH
VALLEY
MILFORD
B E A V E R
MILFORD
CENTRAL
MOB
MILFORD
SOUTH
MOB
HAMLIN
VALLEY
E S C A L A N T E
I R O N
D E S E R T
CEDAR CITY
Cedar City
Minersville
Adamsville
Greenville
Lund
Zane
Beryl
Avon
Table Butte
Summit
Enoch
Iron Springs
Beryl Junction
ANTELOPE
RANGE
Newcastle
Desert Mound
Enterprise
HARMONY
MOUNTAINS
DIXIE
NATIONAL FOREST
Paragonah
Parowan
Brian Head
Bradshaw Mountain
Black Rock
Lamer

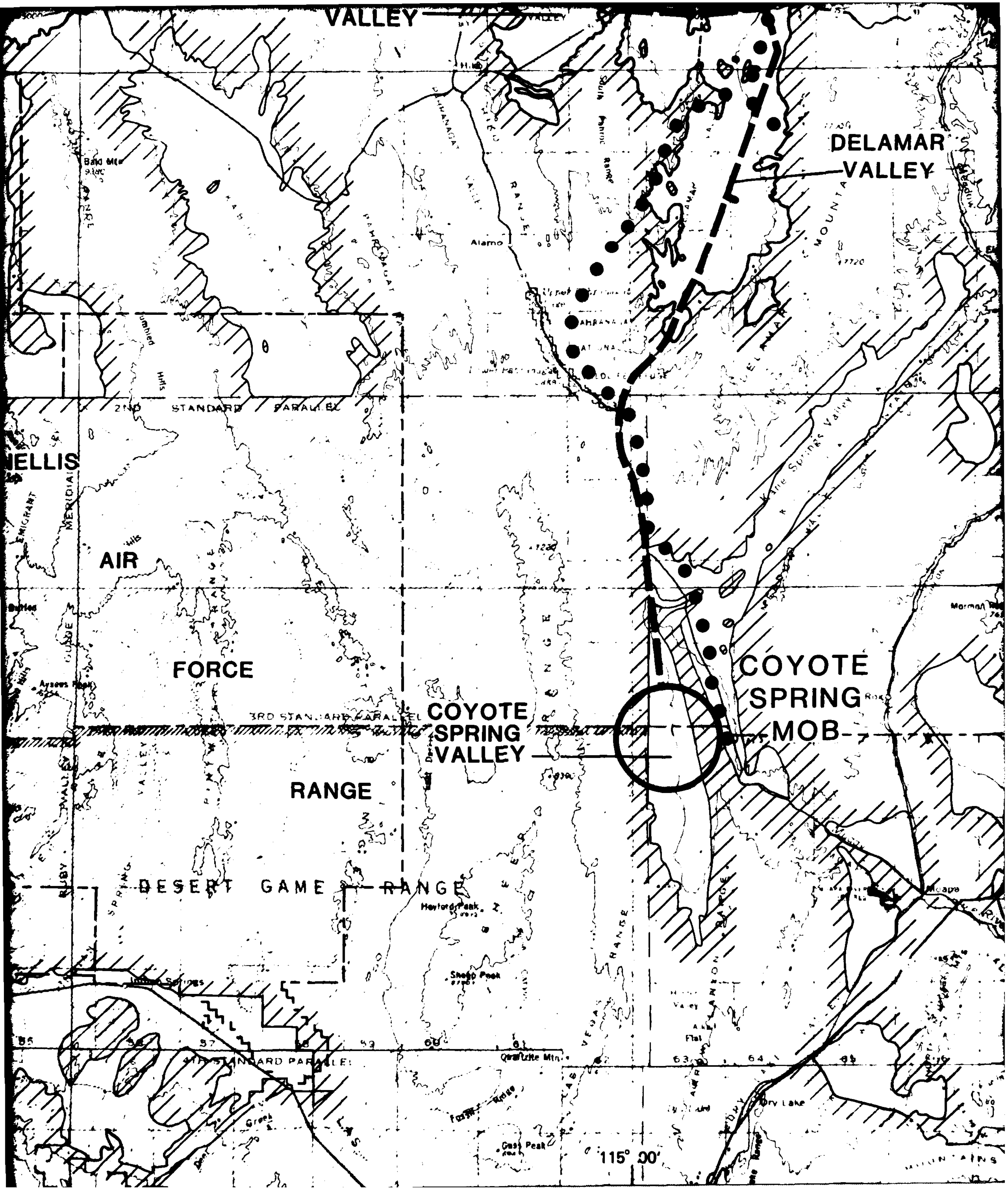


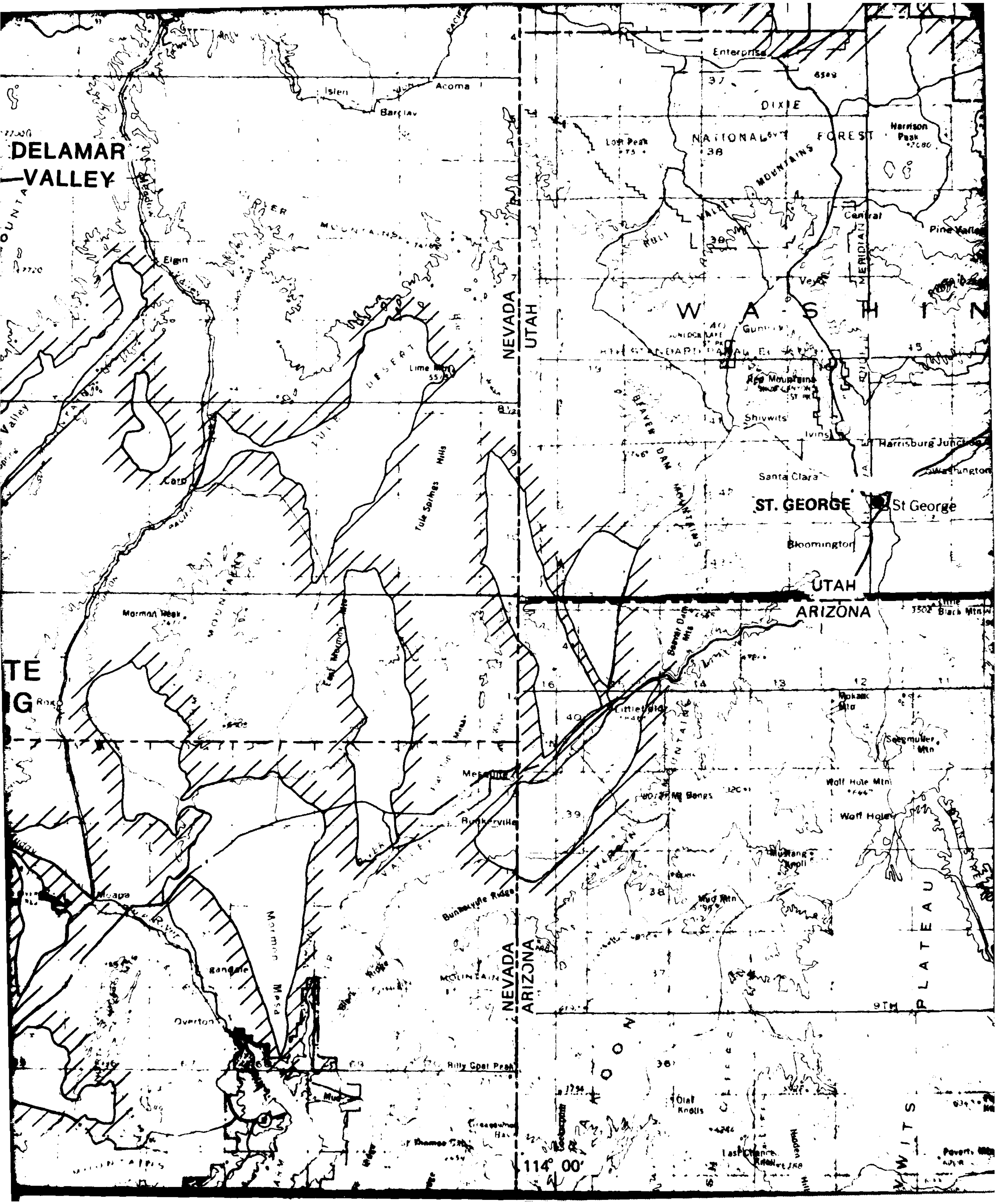
Black Rock
NATIONAL FOREST
Cove Fort
Joseph
Monroe
Savier
Marysvale
Thomasonville
MILFORD
Manderfield
BEAVER
Beaver
Bradshaw Mountain
Adamsville
Greenville
Minersville
Junction
Kingston
Circleville
Angle
ILFORD
ENTRAL
MOB
Table Mountain
Antimony
38° 00'
Spry
Paragonah
Little Creek Peak
Parowan
Summit
Enoch
PLATEAU
Panguitch
DIXIE
NATIONAL FOREST
CEDAR CITY
Cedar City
Hatch
Rubys Inn
Tropic
Bryce Canyon
BRYCE CANYON
NATIONAL MONUMENT
Cannonville
Black Butte
Long Valley Junction
Alton
Kodachrome
Pine Springs Knoll
KOLOB



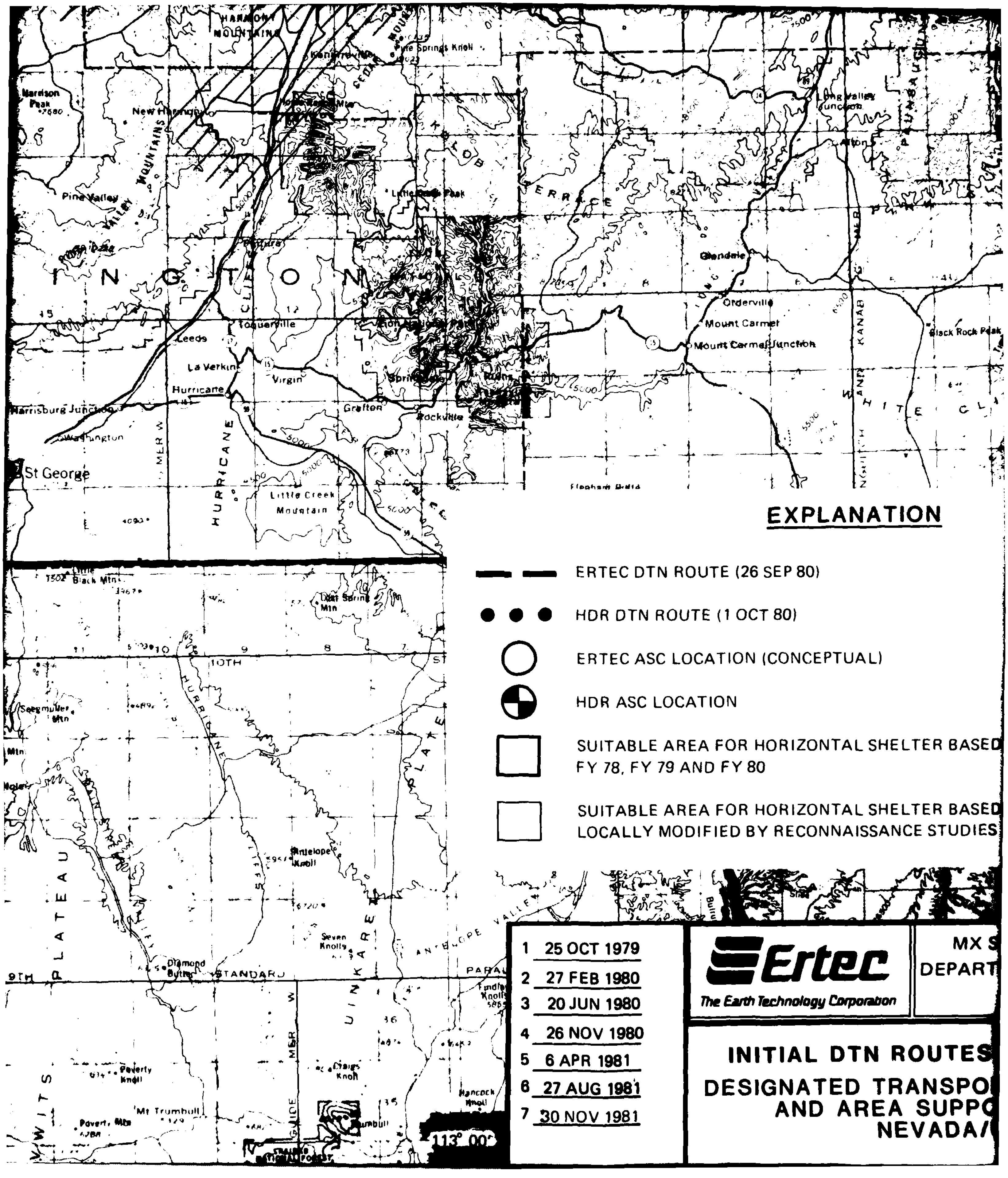
NEVADA
CALIFORNIA
NELLIS
Mt Jackson
Palmetto Mtn
Lida
Magruder Mtn
Gold Point
Mt Dunfee
Deep Springs
Scottys Junction
37° 00'
VON SCHMIDT LINE (B.S.) APPROX.
Scottys Castle
Ubehebe Crater
DEATH VALLEY
NATIONAL MONUMENT
Midway Wells
Mesquite
Flat
Stovepipe Wells
Stovepipe Wells Hotel
DEATH VALLEY
NATIONAL
117° 00'
SCALE
1: 500,000
0 10 20
STATUTE MILES
0 10 20
KILOMETERS


VALLEY
Gold Mtn
Mt Helen
Quartzite Mtn
Belted Peak
Wheelbarrow Peak
NELLIS
AIR
Obsidian Butte
Black Mtn
Quartz Mtn
FORCE
RANGE
PAHUTE
MESA
Oak Spring Butte
NEVADA
Pinyon Butte
Timber Mtn
TEST
Banded Mtn
Mine Mtn
Shoshone Peak
The Bench
SITE
Frenchman Lake
Mt Salyer
(DOE)
Red Mtn
Mercury
NELLIS
Sawtooth Mtn
Beatty
Beatty Mtn
Meiklejohn Peak
Black Cone
Lathrop Wells
AMARGOSA
DESERT
Point of Rocks
Mt Sterling
Death Valley
NEVADA
CALIFORNIA
116° 00'


VALLEY
DELAMAR VALLEY
NELLIS
AIR
FORCE
RANGE
DESERT GAME RANGE
COYOTE SPRING VALLEY
COYOTE SPRING MOB
2ND STANDARD PARALLEL
3RD STANDARD PARALLEL
4TH STANDARD PARALLEL
Alamo
Moapa
Hayford Peak
Sheep Peak
Gass Peak
Quartzite Mtn
Dry Lake
Kane Springs Valley
115° 00′



DELAMAR
VALLEY
Islen
Acoma
Barclay
Enterprise
DIXIE
NATIONAL FOREST
Harrison Peak
Lost Peak
MOUNTAINS
Central
Pine Valley
MERIDIAN
Elgin
Veyo
W A S H I N
NEVADA
UTAH
Gunlock
Lime Mtn
DESERT
Red Mountains
Shivwits
Ivins
Harrisburg Junction
Washington
BEAVER DAM MOUNTAINS
Tule Springs Hills
Caliente
Santa Clara
ST. GEORGE
St George
Bloomington
UTAH
ARIZONA
Black Mtn
Mormon Peak
Beaver Dam Mts
TE
G
Littlefield
Mokaac Mtn
Seegmuller Mtn
Mesquite
Wolf Hole Mtn
Mt Bangs
Wolf Hole
Bunkerville
Mustang Knoll
Moapa
Mud Mtn
Bunkerville Ridge
Mormon Mesa
P L A T E A U
NEVADA
ARIZONA
Overton
Billy Goat Peak
Olaf Knolls
Grapevine Wash
Last Chance Knoll
Poverty Mtn
114° 00'
S H I V W I T S



EXPLANATION

ERTEC DTN ROUTE (26 SEP 80)

HDR DTN ROUTE (1 OCT 80)

ERTEC ASC LOCATION (CONCEPTUAL)

HDR ASC LOCATION

SUITABLE AREA FOR HORIZONTAL SHELTER BASED
FY 78, FY 79 AND FY 80

SUITABLE AREA FOR HORIZONTAL SHELTER BASED
LOCALLY MODIFIED BY RECONNAISSANCE STUDIES

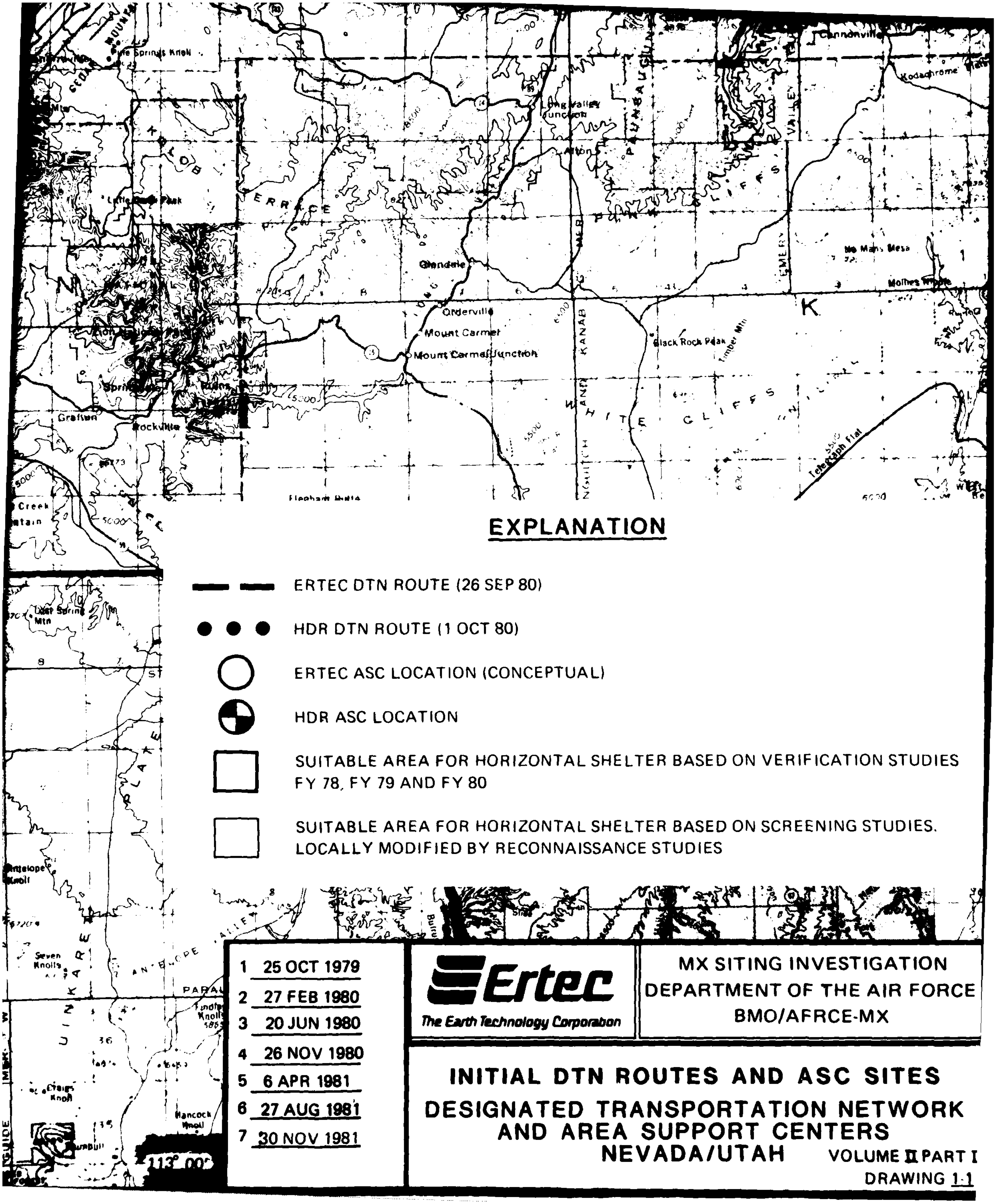
1	25 OCT 1979
2	27 FEB 1980
3	20 JUN 1980
4	26 NOV 1980
5	6 APR 1981
6	27 AUG 1981
7	30 NOV 1981

Ertec
The Earth Technology Corporation

MX S
DEPART

INITIAL DTN ROUTES

DESIGNATED TRANSPO
AND AREA SUPP
NEVADA/



EXPLANATION

ERTEC DTN ROUTE (26 SEP 80)

HDR DTN ROUTE (1 OCT 80)

ERTEC ASC LOCATION (CONCEPTUAL)

HDR ASC LOCATION

SUITABLE AREA FOR HORIZONTAL SHELTER BASED ON VERIFICATION STUDIES FY 78, FY 79 AND FY 80

SUITABLE AREA FOR HORIZONTAL SHELTER BASED ON SCREENING STUDIES. LOCALLY MODIFIED BY RECONNAISSANCE STUDIES

1 25 OCT 1979
2 27 FEB 1980
3 20 JUN 1980
4 26 NOV 1980
5 6 APR 1981
6 27 AUG 1981
7 30 NOV 1981

Ertec
The Earth Technology Corporation

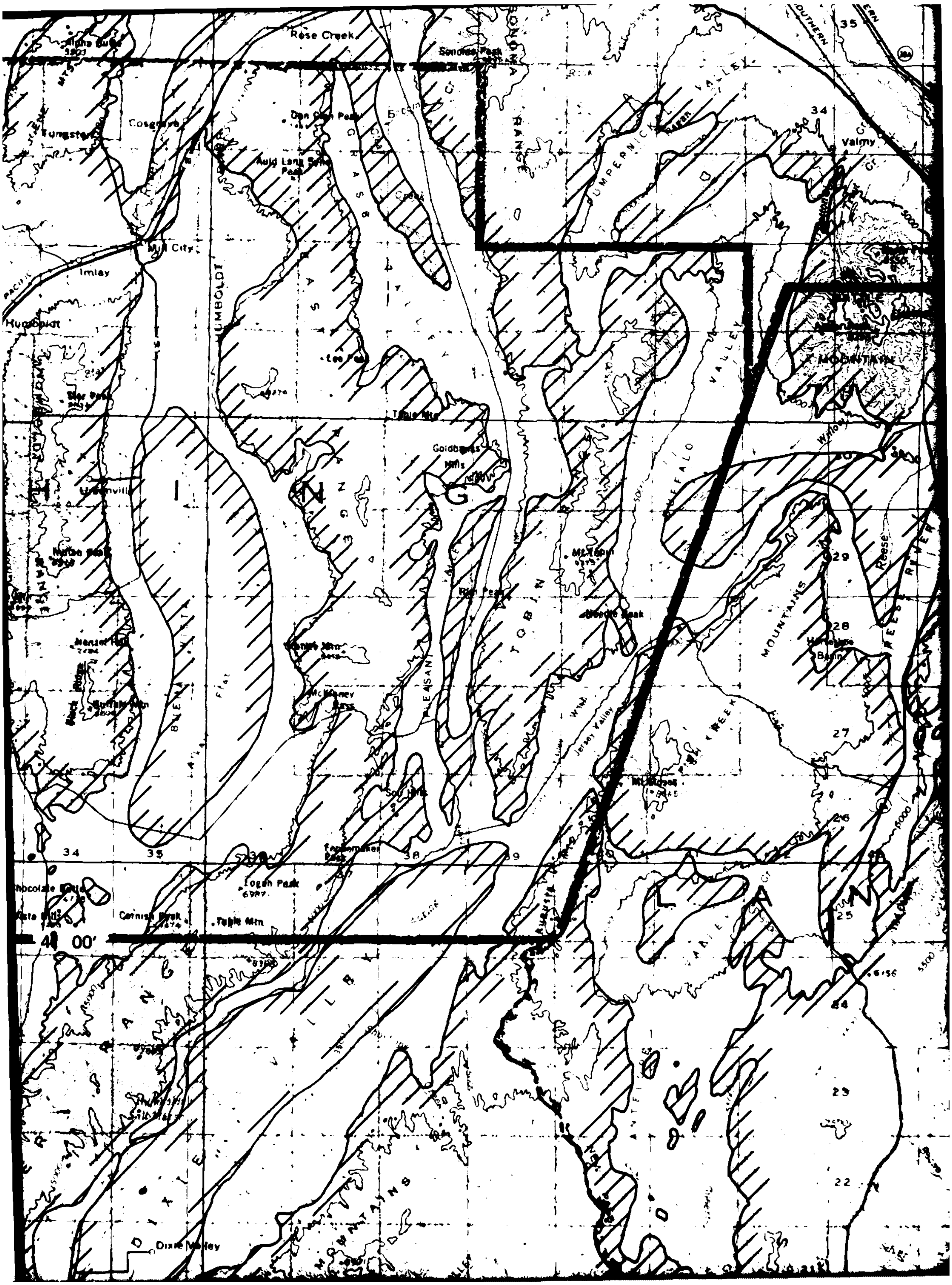
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

INITIAL DTN ROUTES AND ASC SITES

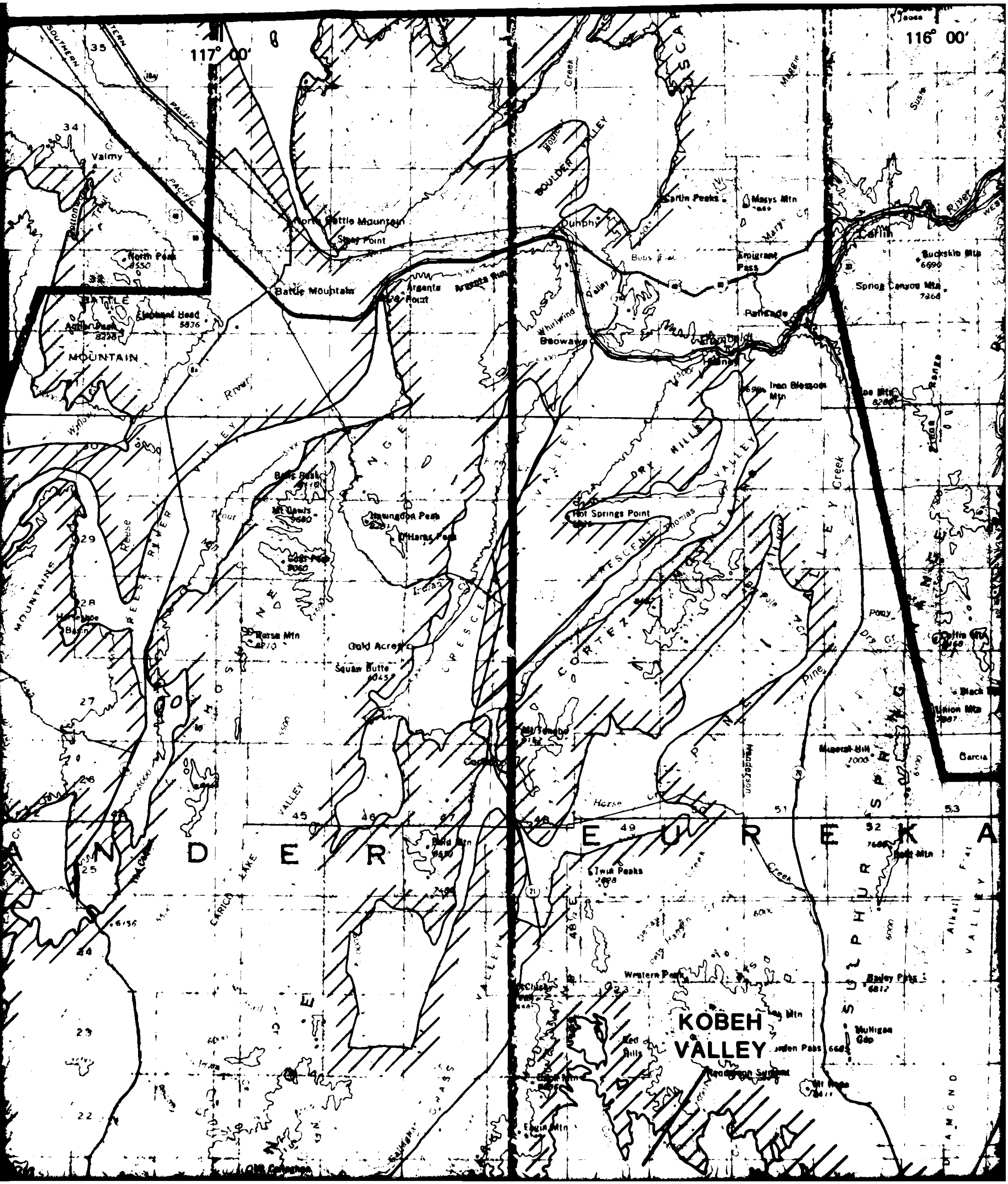
DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

VOLUME II PART I

DRAWING 1-1

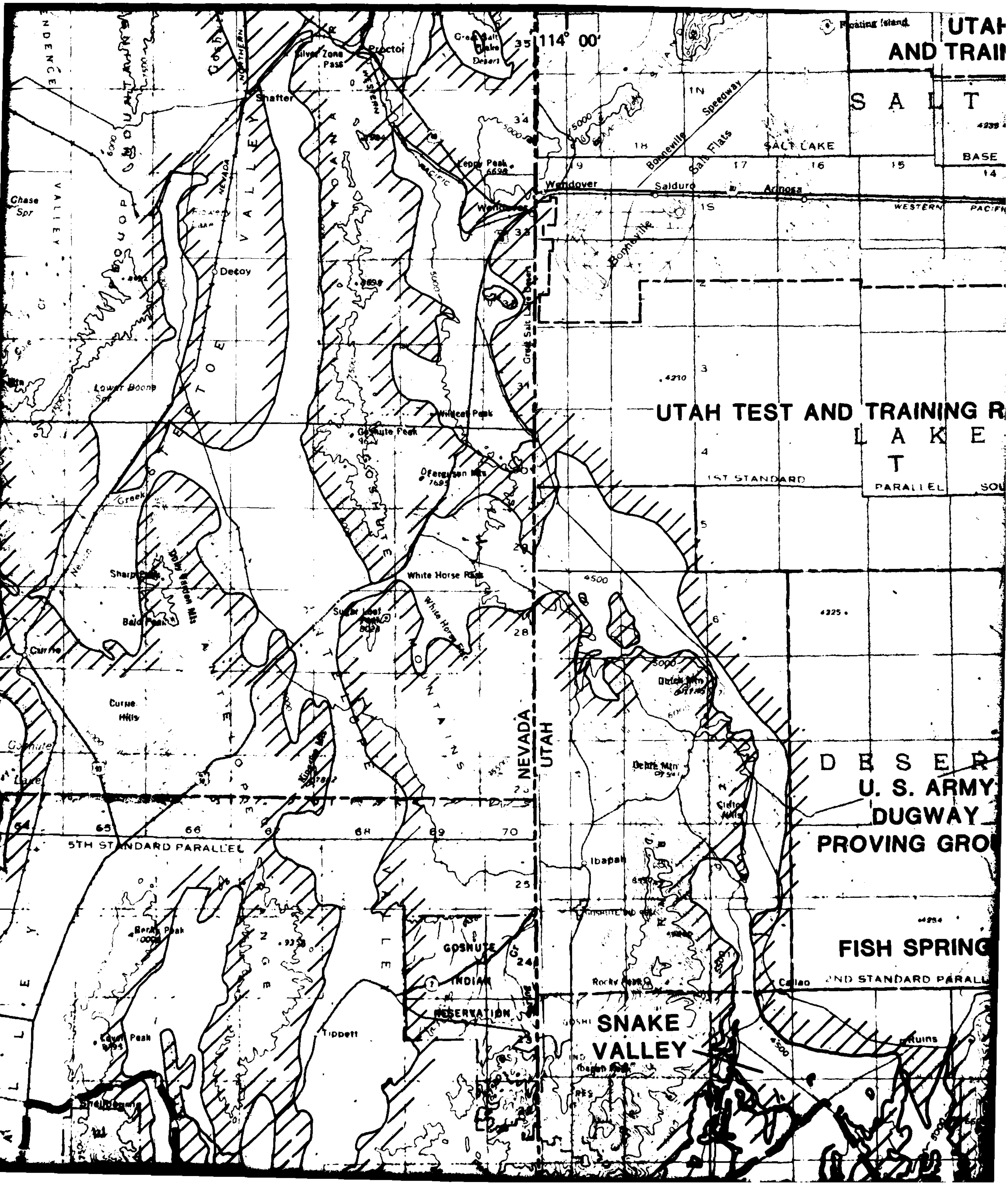


Rose Creek
Sonoma Peak
Tungsten
Cosgrave
Auld Lang Syne Peak
Mill City
Imlay
Humboldt
HUMBOLDT
SONOMA
RANGE
Lee Peak
Table Mtn
Goldbanks
Hills
Unionville
Star Peak
Mt Tobin
TOBIN
Red Peak
Needle Peak
McKinney
Pass
Sou Hills
BUFFALO
VALLEY
Jersey Valley
Mt Moses
MOUNTAINS
Valmy
Reese
Logan Peak
Cornish Peak
Table Mtn
Chocolate Butte
00′
Dixie Valley
DIXIE
MOUNTAINS
SOUTHERN
35
34
29
28
27
26
25
24
23
22
36
38
39

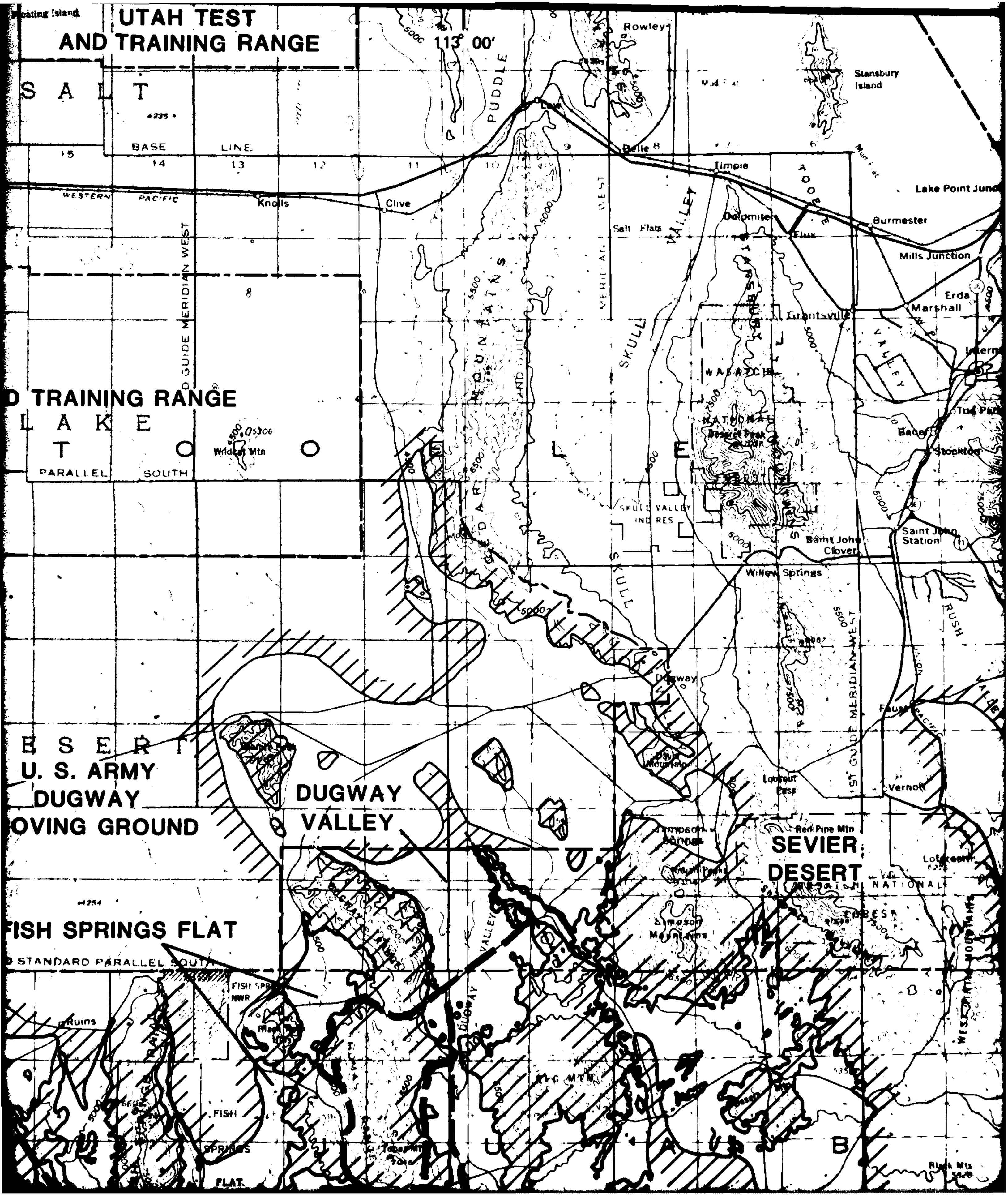


117° 00'
116° 00'
Valmy
North Battle Mountain
Battle Mountain
BATTLE
MOUNTAIN
Antler Peak
8236
Elephant Head
5836
North Peak
8550
Dunphy
BOULDER VALLEY
Carlin Peaks
Emigrant Pass
Carlin
Buckskin Mtn
6690
Spring Canyon Mtn
7364
Palisade
Beowawe
Whirlwind Valley
Argenta
Iron Blossom Mtn
Hot Springs Point
DRY HILLS
CRESCENT
CORTEZ
PINE VALLEY
REESE RIVER
Mt Lewis
Horse Mtn
Gold Acres
Squaw Butte
6045
Horseshoe Basin
Mineral Hill
7000
Union Mtn
Garcia
L A N D E R
E U R E K A
Twin Peaks
Western Peak
KOBEH
VALLEY
Red Hills
Bailey Pass
6812
Mulligan Gap

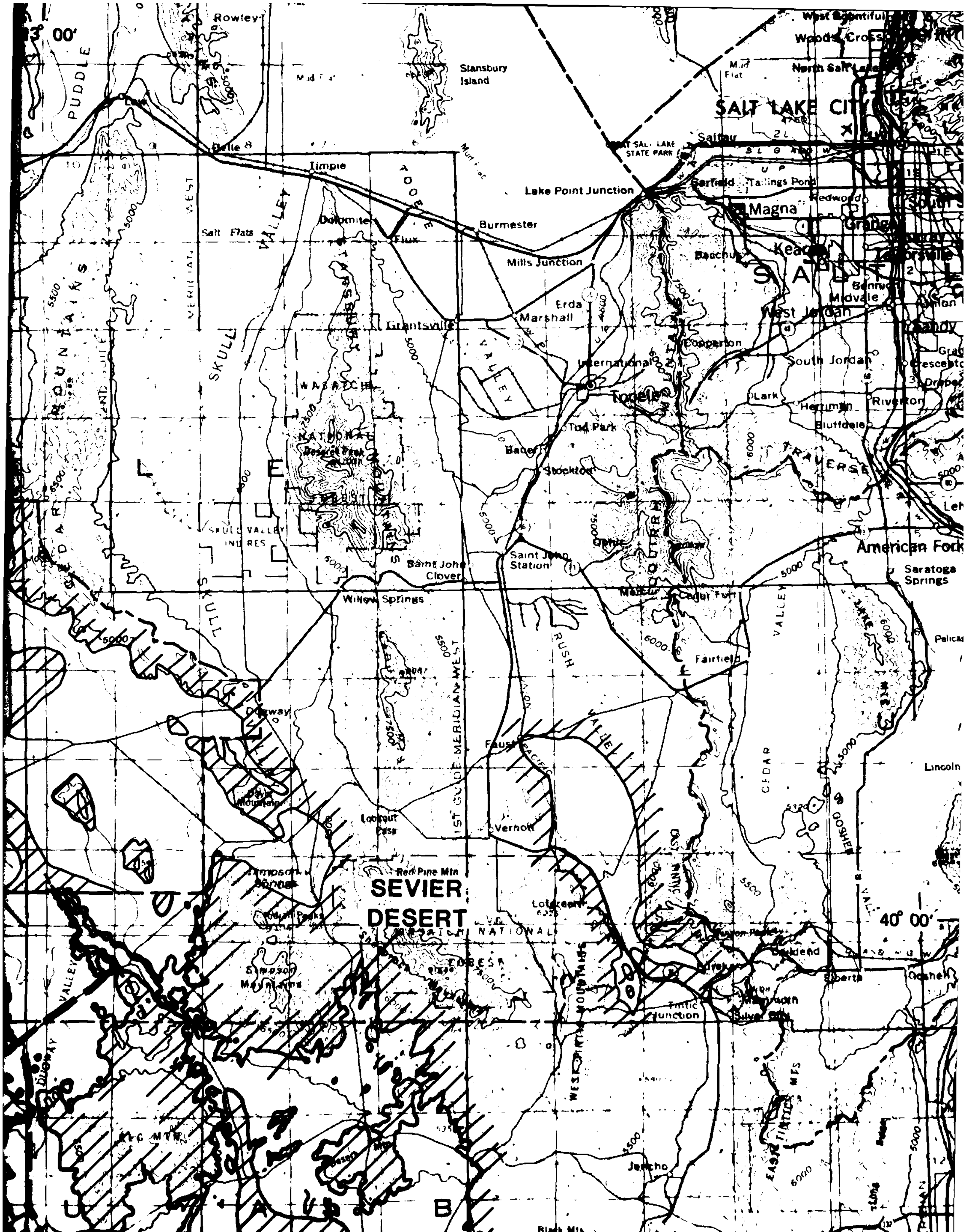
116° 00'
115° 00'
Elburz
Elko Mtn
Elko
Tobar
Snow Water Lake
Arthur
HUMBOLDT
Lamoille
Grindstone Mtn
Buckskin Mtn
6690
White Flats
Dixie Flats
SOUTH FORK IND RES
Chase Spr
Valley Mtn
Lone Butte
Spruce Mtn
6TH STANDARD PARALLEL
NATIONAL
Dry Lake Flat
Jiggs
FRANKLIN LAKE
Robinson Mtn
Ruby Valley
Odger Buttes
West Butte
FOREST
Coffin Mtn
High Bald Peaks
RUBY LAKE
NATIONAL
WILDLIFE REFUGE
Black Mtn
Union Mtn
Currie
Garcia Flat
53
54
55
56
58
60
61
62
64
A
Big Bald Mtn
Little Bald Mtn
Cherry Creek
Overland Pass
Bruil Pass
LONG



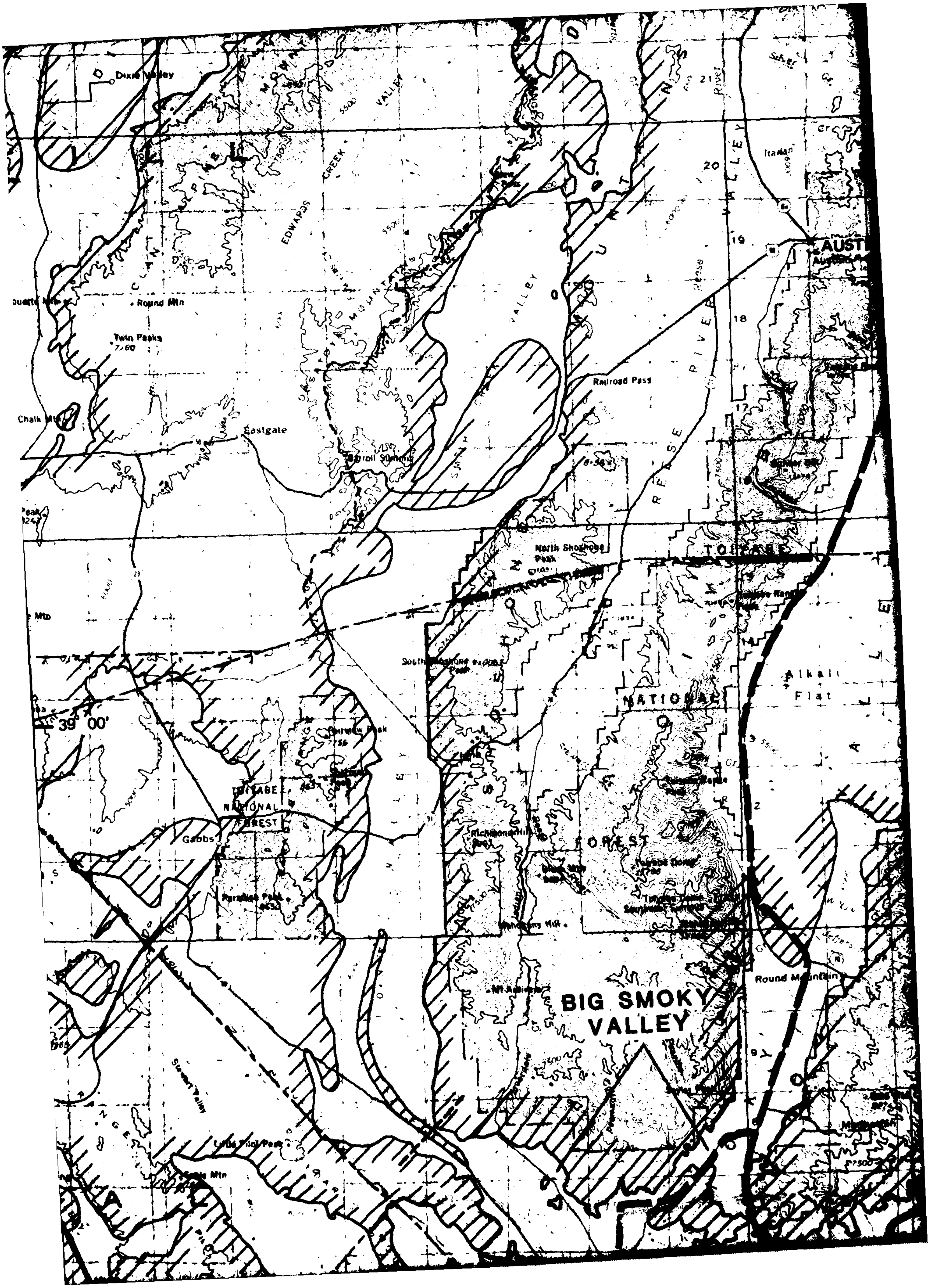
114° 00'
UTAH TEST AND TRAINING RANGE
SALT LAKE
Bonneville Speedway
Bonneville Salt Flats
Wendover
Salduro
Arinosa
Shafter
Proctor
Silver Zone Pass
Decoy
Leppy Peak
Wildcat Peak
Goshute Peak
Ferguson Mts
White Horse Pass
Sugar Loaf Peak
Sharp Peak
Bald Peak
Currie
Currie Hills
Dolly Varden Mts
Lower Boone Spr
Chase Spr
GOSHUTE INDIAN RESERVATION
Tippett
Berry Peak
Lover Peak
Ibapah
Callao
Rocky Peak
Dutch Mtn
Dellfe Mtn
Clifton Hills
Ruins
NEVADA
UTAH
DESERT
U. S. ARMY DUGWAY PROVING GROUND
FISH SPRINGS
SNAKE VALLEY
5TH STANDARD PARALLEL
1ST STANDARD PARALLEL
2ND STANDARD PARALLEL
GOSHUTE VALLEY
WESTERN PACIFIC
Great Salt Lake Desert
Floating Island



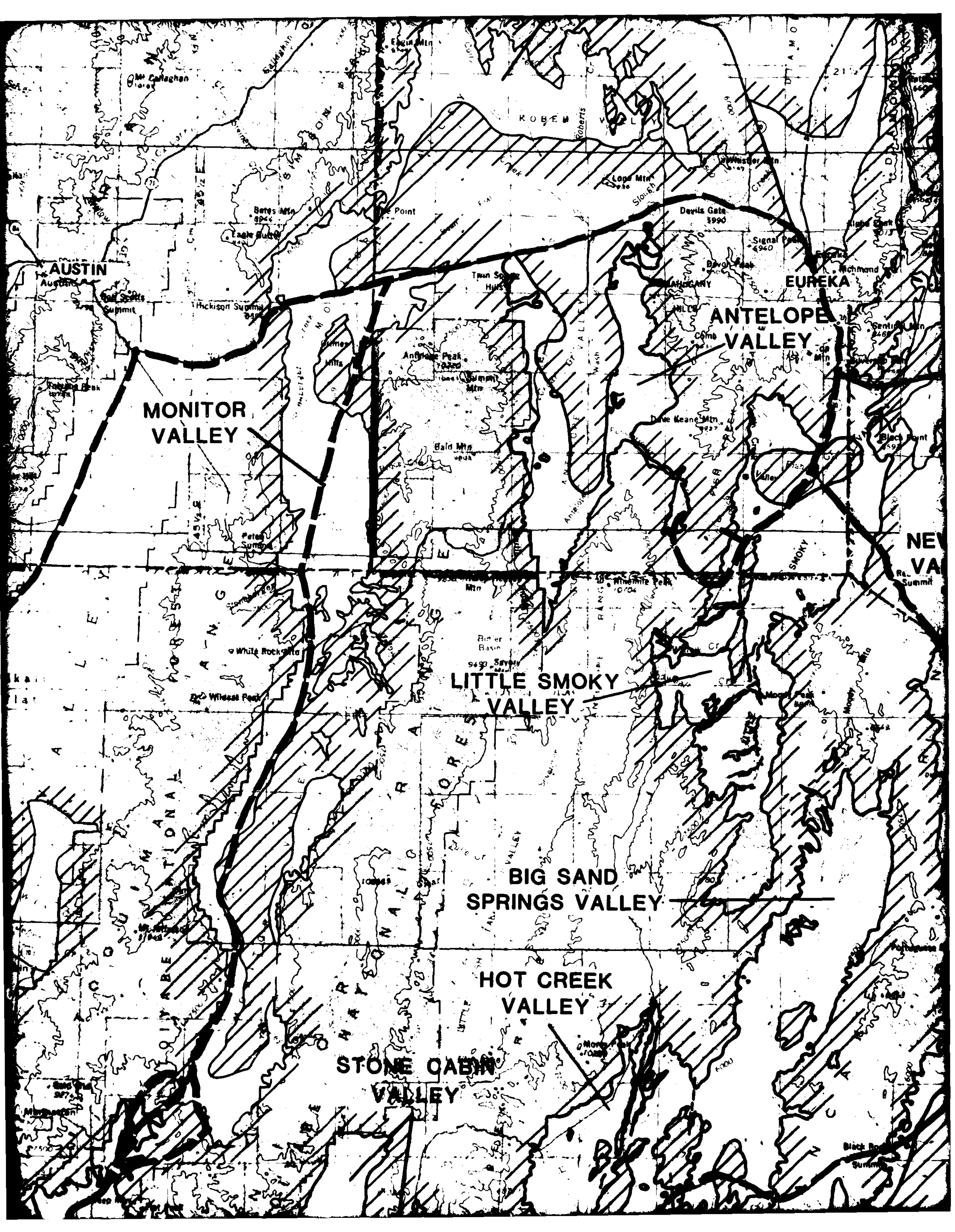
UTAH TEST
AND TRAINING RANGE
113° 00′
SALT
BASE LINE
WESTERN PACIFIC
Knolls
Clive
Rowley
Stansbury Island
Lake Point Junc
Burmester
Mills Junction
Erda
Marshall
Grantsville
Timpie
Dolomite
Flux
Salt Flats
PUDDLE
SKULL VALLEY
TOOELE
VALLEY
WASATCH
NATIONAL
Deseret Peak
SKULL VALLEY IND RES
Saint John Station
Saint John
Clover
Willow Springs
Stockton
Bauer
RUSH
D TRAINING RANGE
LAKE
TOOELE
PARALLEL SOUTH
Wildcat Mtn
GUIDE MERIDIAN WEST
1ST GUIDE MERIDIAN WEST
DESERT
U. S. ARMY
DUGWAY
PROVING GROUND
DUGWAY VALLEY
Dugway
Lookout Pass
Vernon
Faust
Red Pine Mtn
SEVIER DESERT
Simpson Mountains
FISH SPRINGS FLAT
STANDARD PARALLEL SOUTH
FISH SPRINGS NWR
Ruins
FISH SPRINGS
FLAT
Topaz Mtn
Black Mts

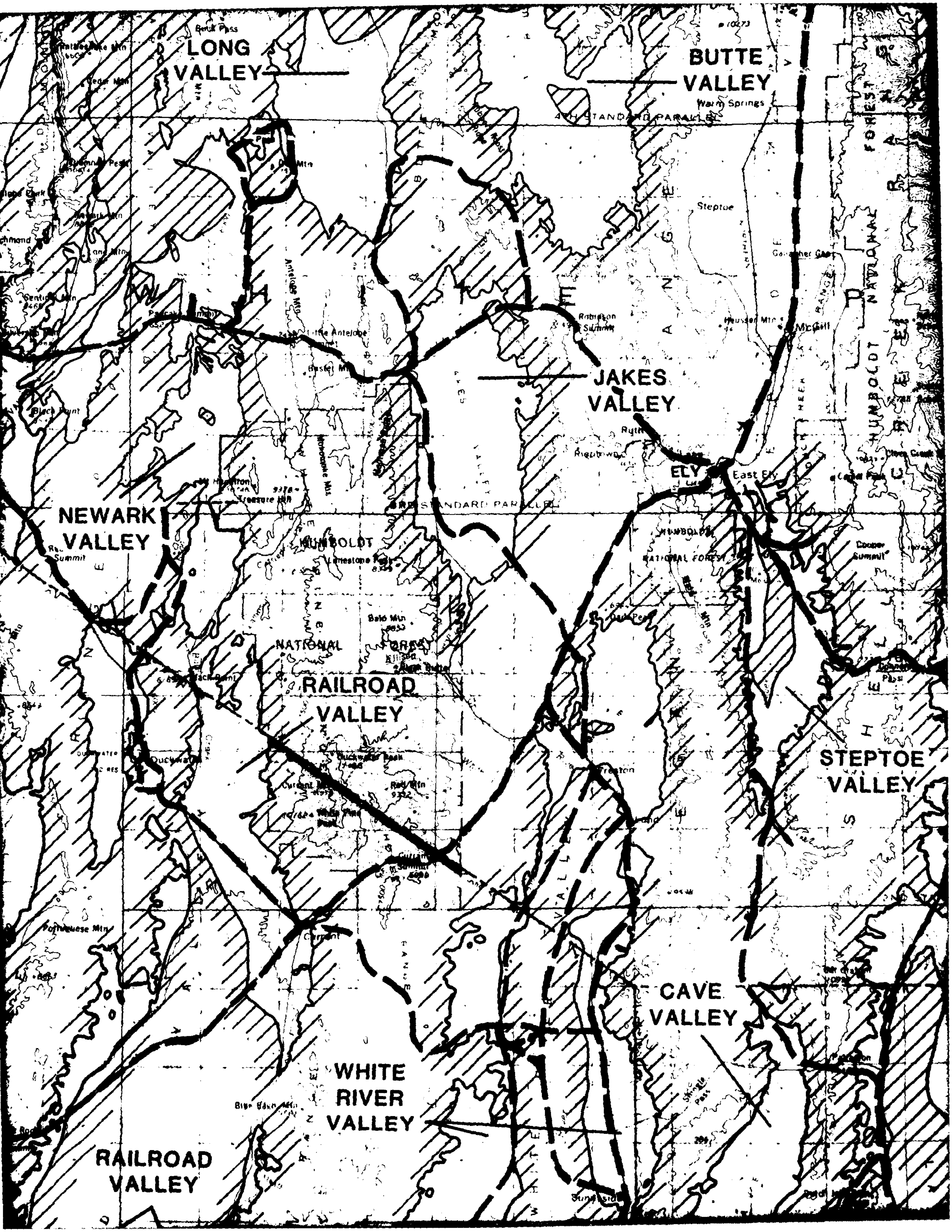


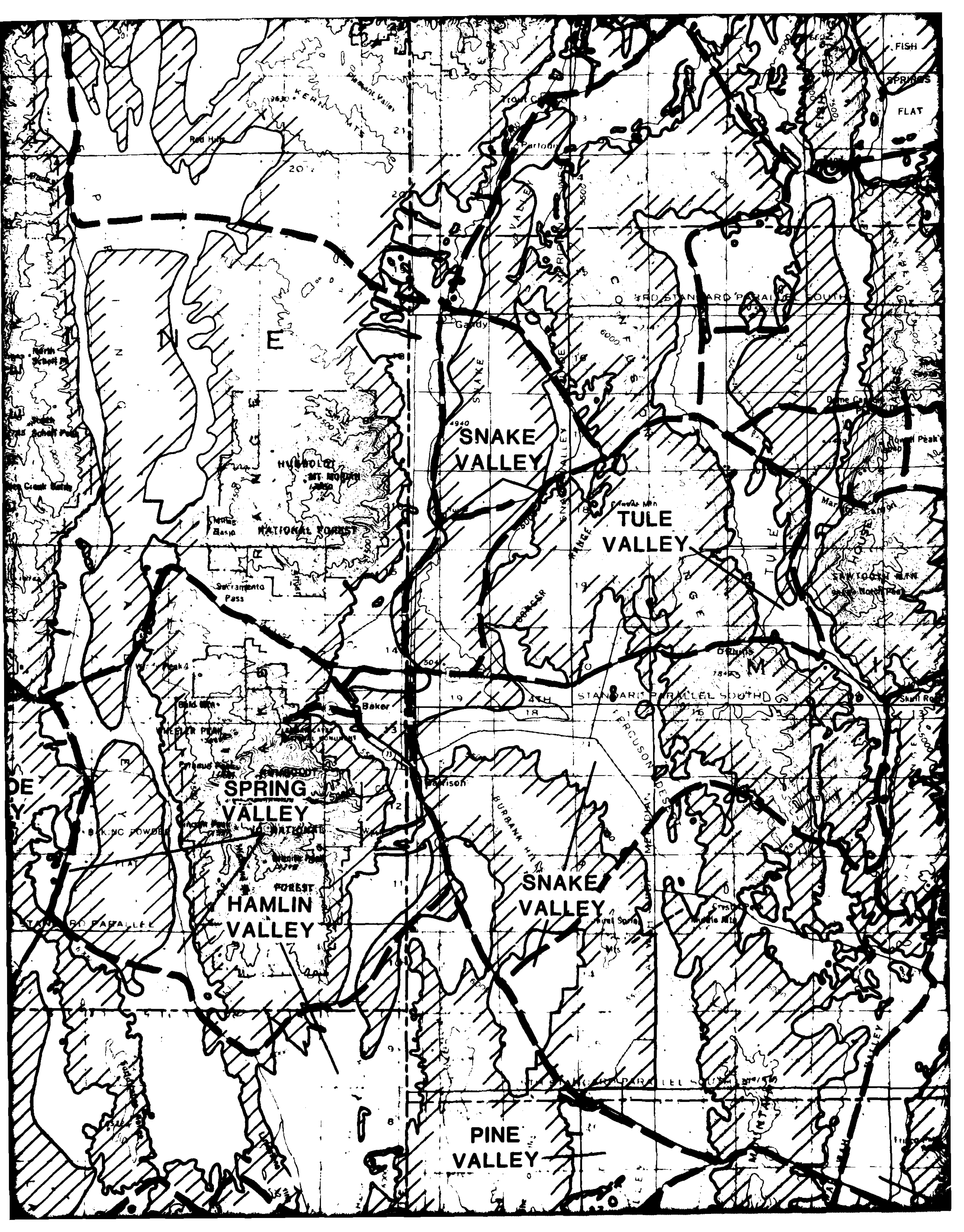
Rowley
Stansbury Island
Mud Flat
SALT LAKE CITY
West Bountiful
Woods Cross
North Salt Lake
Saltair
GREAT SALT LAKE STATE PARK
Lake Point Junction
Garfield
Tailings Pond
Redwood
Magna
Granger
Kearns
Bacchus
Midvale
West Jordan
Sandy
Copperton
South Jordan
Lark
Herriman
Riverton
Bluffdale
Draper
TRAVERSE
American Fork
Saratoga Springs
Lehi
Pelican
Lincoln
Timpie
Dolomite
Flux
Burmester
Mills Junction
Erda
Marshall
Grantsville
International
Tooele
Tod Park
Bauer
Stockton
Ophir
Saint John Station
Saint John
Clover
Willow Springs
Mercur
Cedar Fort
Fairfield
RUSH
VALLEY
SKULL VALLEY
SKULL VALLEY IND RES
Salt Flats
PUDDLE
WASATCH
NATIONAL
Deseret Peak
Dugway
Faust
PACIFIC
Vernon
Lookout Pass
Simpson Springs
Red Pine Mtn
SEVIER
DESERT
Lofgreen
Tintic Junction
Silver City
Eureka
Elberta
Goshen
CEDAR
GOSHEN
40° 00′
Simpson Mountains
EAST TINTIC MTS
WEST TINTIC MOUNTAINS
Jericho
Black Mts
1ST GUIDE MERIDIAN WEST
SALT LAKE
JUAB



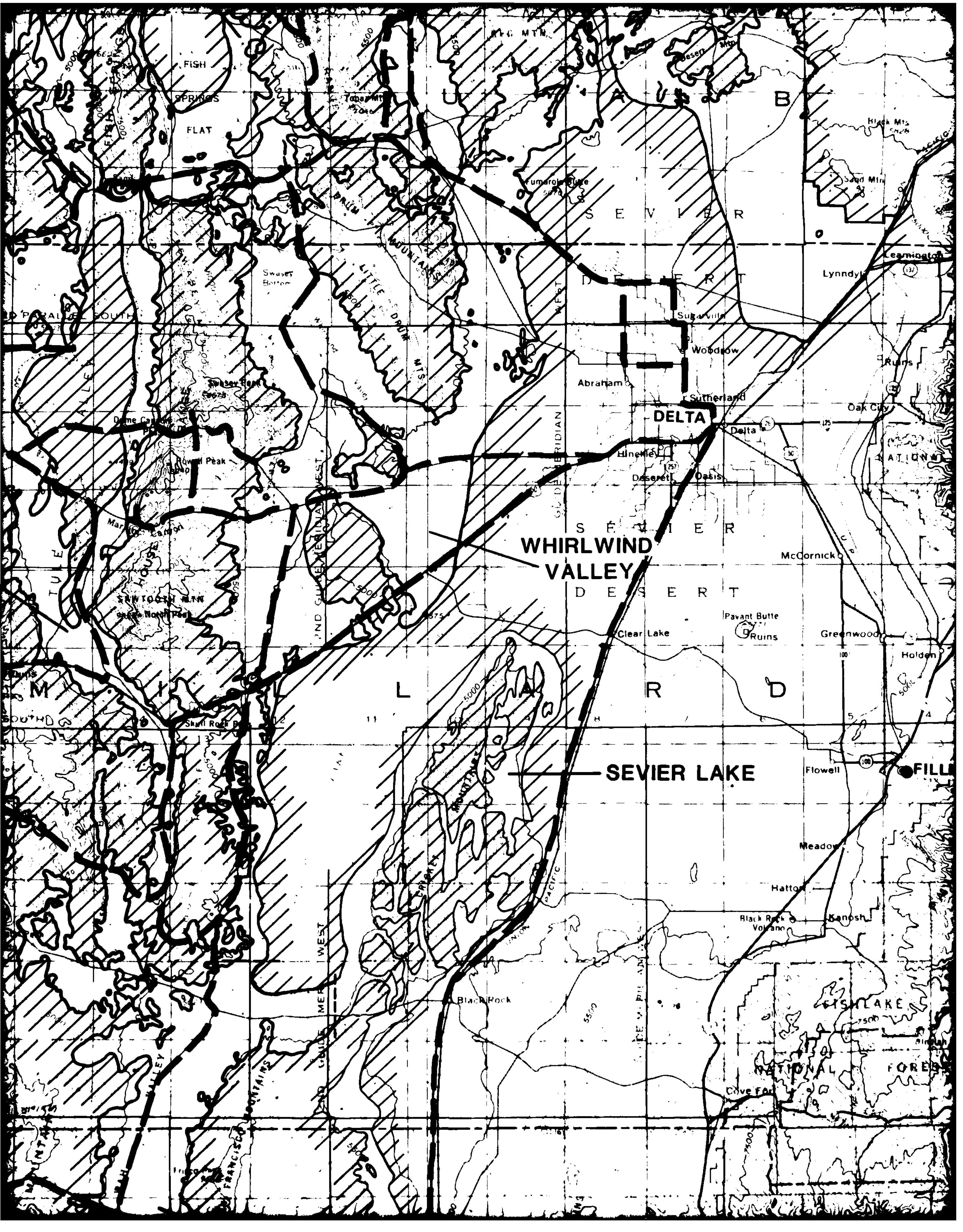
Dixie Valley
EDWARDS CREEK VALLEY
Round Mtn
Twin Peaks
Chalk Mtn
Eastgate
Railroad Pass
North Shoshone Peak
South Shoshone Peak
39° 00'
TOIYABE NATIONAL FOREST
Gabbs
Paradise Peak
NATIONAL FOREST
Alkali Flat
Round Mountain
BIG SMOKY VALLEY
Reese River
Ione
Stewart Valley


AUSTIN
EUREKA
ANTELOPE VALLEY
MONITOR VALLEY
LITTLE SMOKY VALLEY
BIG SAND SPRINGS VALLEY
HOT CREEK VALLEY
STONE CABIN VALLEY
Devils Gate 5990
Hickison Summit
Bald Mtn
Dave Keane Mtn
White Rock Mtn
Wildcat Peak

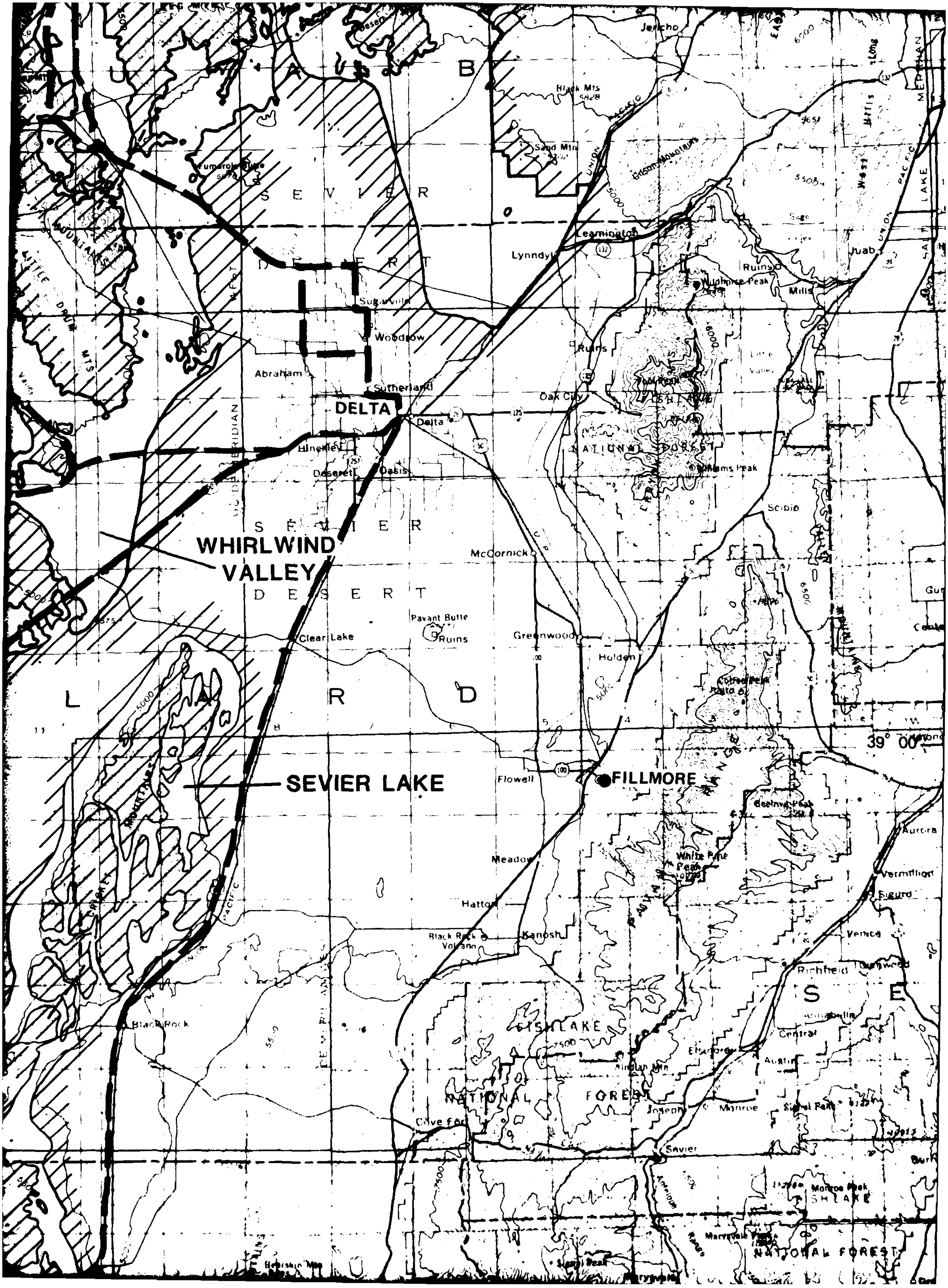

LONG VALLEY
BUTTE VALLEY
Warm Springs
4TH STANDARD PARALLEL
Steptoe
JAKES VALLEY
ELY
East Ely
McGill
Robinson Summit
NEWARK VALLEY
HUMBOLDT
NATIONAL FOREST
RAILROAD VALLEY
STEPTOE VALLEY
CAVE VALLEY
WHITE RIVER VALLEY
RAILROAD VALLEY
Black Point
Currant
Preston
Lund
Sunnyside
Duckwater
Cooper Summit



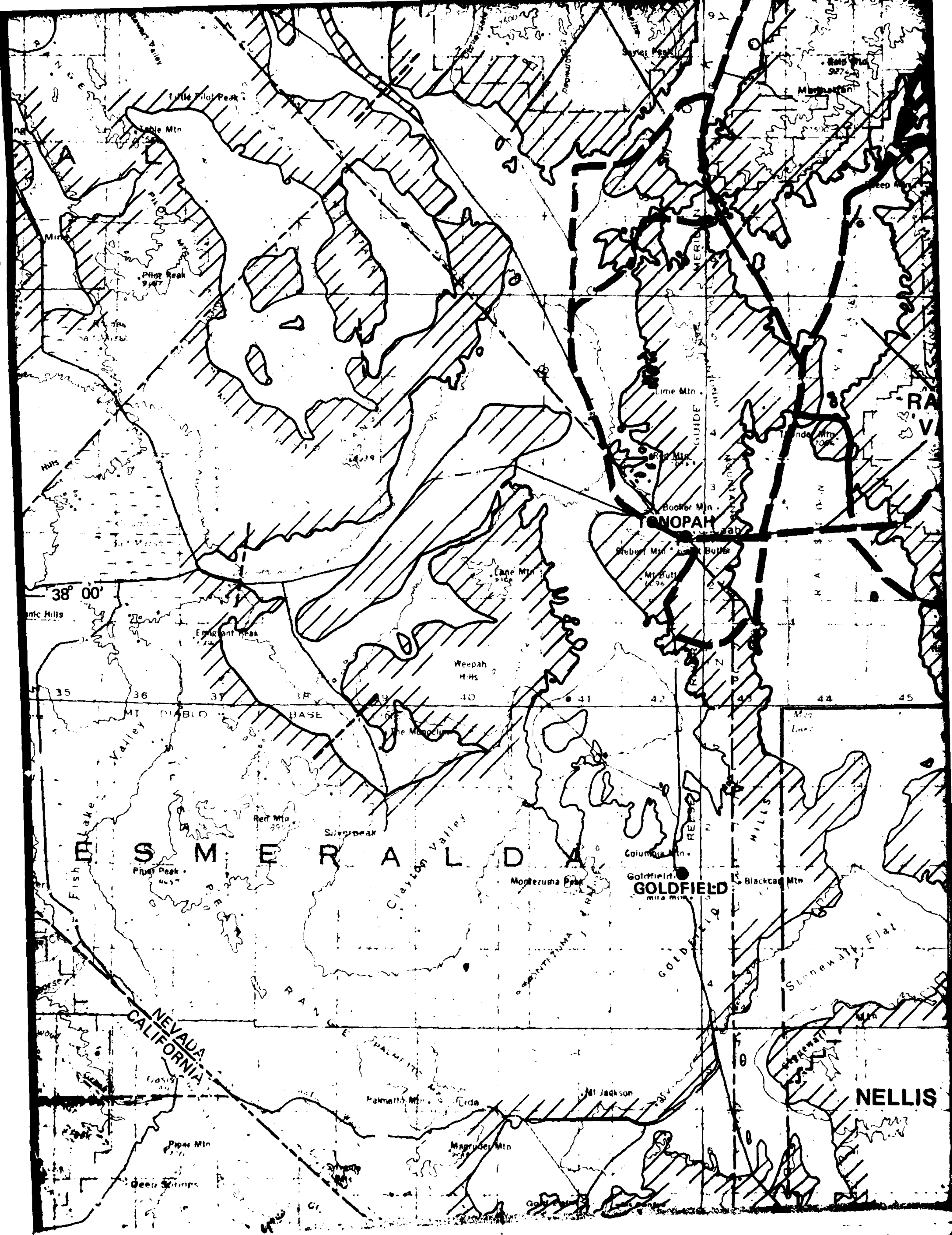
SNAKE VALLEY
TULE VALLEY
SPRING VALLEY
HAMLIN VALLEY
SNAKE VALLEY
PINE VALLEY
FISH SPRINGS FLAT
HUMBOLDT NATIONAL FOREST
3RD STANDARD PARALLEL SOUTH
4TH STANDARD PARALLEL SOUTH
Gandy
Baker
Garrison
Sacramento Pass
Wheeler Peak
Red Hills
Trout Creek
Partoun



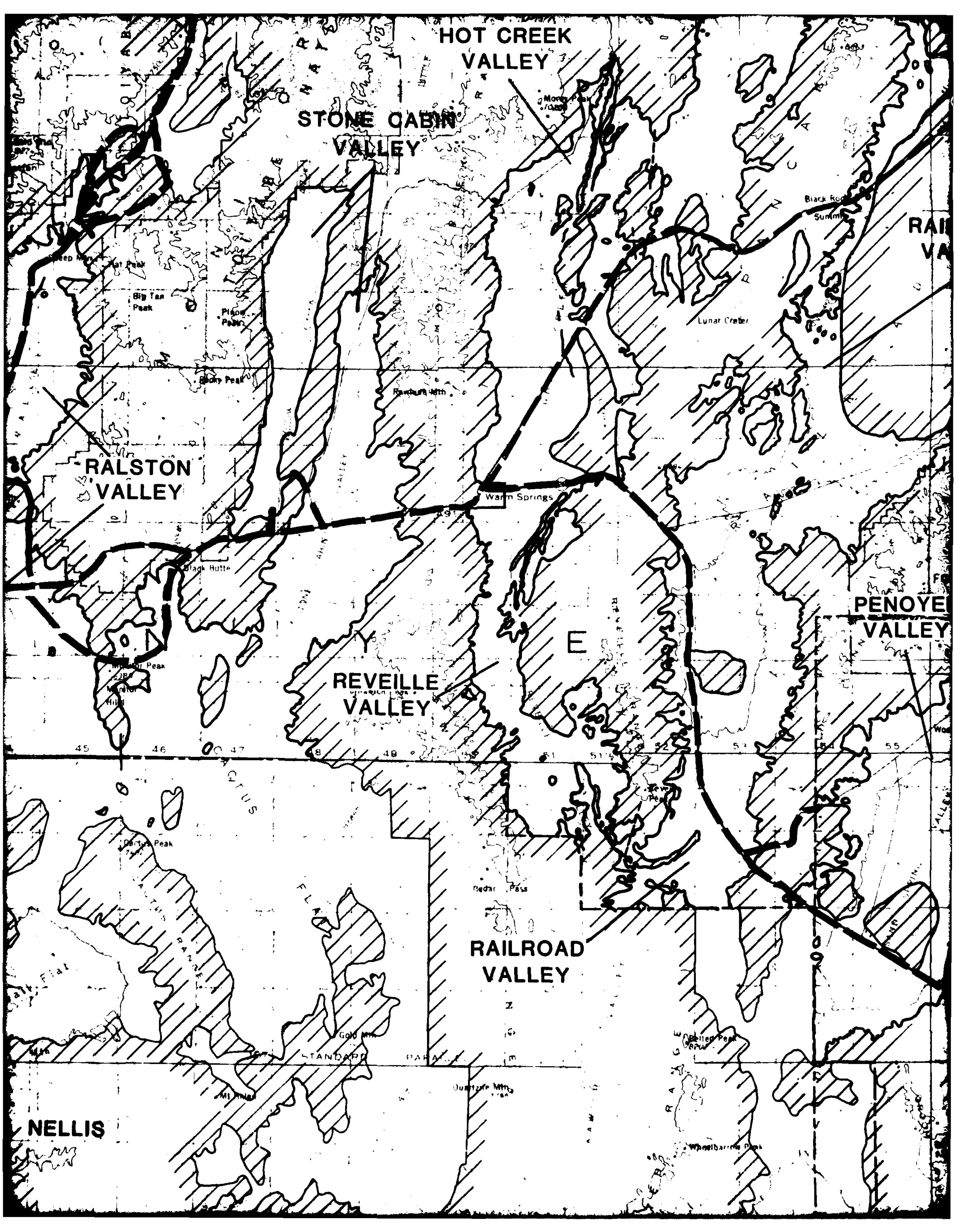
FISH SPRINGS FLAT
SEVIER DESERT
DELTA
WHIRLWIND VALLEY
SEVIER LAKE
MILLARD
Sugarville
Woodrow
Abraham
Sutherland
Delta
Hinckley
Deseret
Oasis
Lynndyl
Leamington
Oak City
McCornick
Clear Lake
Pavant Butte
Ruins
Greenwood
Holden
Flowell
Meadow
Hatton
Black Rock Volcano
Kanosh
Black Rock
Cove Fort
FISHLAKE NATIONAL FOREST
Swasey Peak
Swasey Bottom
Sawtooth Mtn
Notch Peak
Skull Rock Pass
Fumarole Butte
Sand Mtn
Black Mts
Topaz Mtn
Marjum Canyon
Howell Peak
Dome Canyon Pass
LITTLE DRUM MTS
DRUM MOUNTAINS
HOUSE RANGE
CRICKET MOUNTAINS
TULE VALLEY
WAH WAH VALLEY
SAN FRANCISCO MOUNTAINS
2ND GUIDE MERIDIAN WEST
UNION PACIFIC

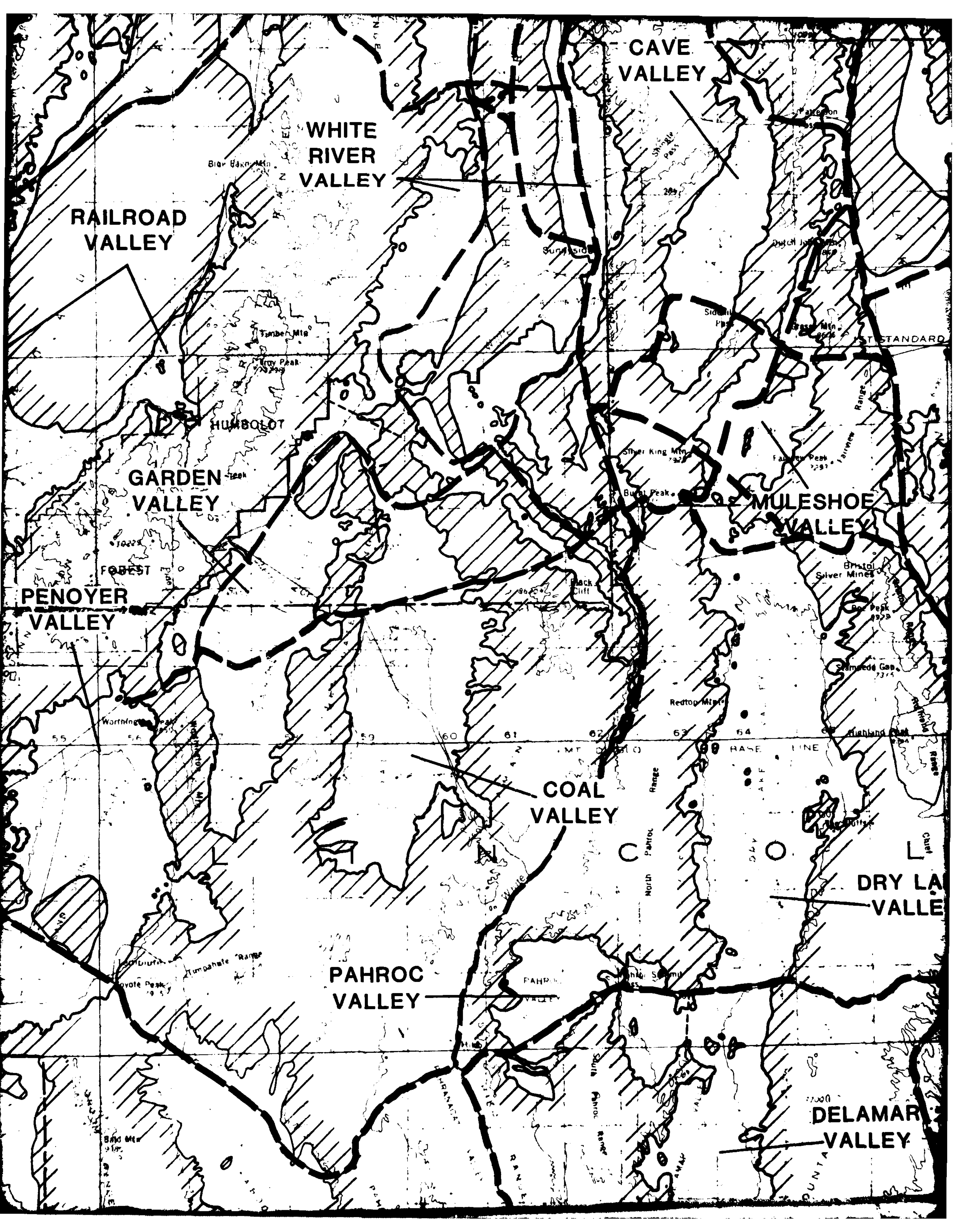


WHIRLWIND VALLEY
DELTA
SEVIER LAKE
FILLMORE
SEVIER DESERT
SEVIER DESERT
Sugarville
Woodrow
Abraham
Sutherland
Delta
Hinckley
Deseret
Oasis
Lynndyl
Leamington
Oak City
McCornick
Pavant Butte
Clear Lake
Greenwood
Holden
Flowell
Meadow
Hatton
Kanosh
Black Rock
Cove Fort
Jericho
Black Mts
Sand Mtn
Scipio
Mills
Aurora
Vermillion
Sigurd
Richfield
Central
Austin
Joseph
Monroe
Sevier
Elsinore
White Pine Peak
Williams Peak
FISHLAKE
NATIONAL FOREST
NATIONAL FOREST
39° 00'

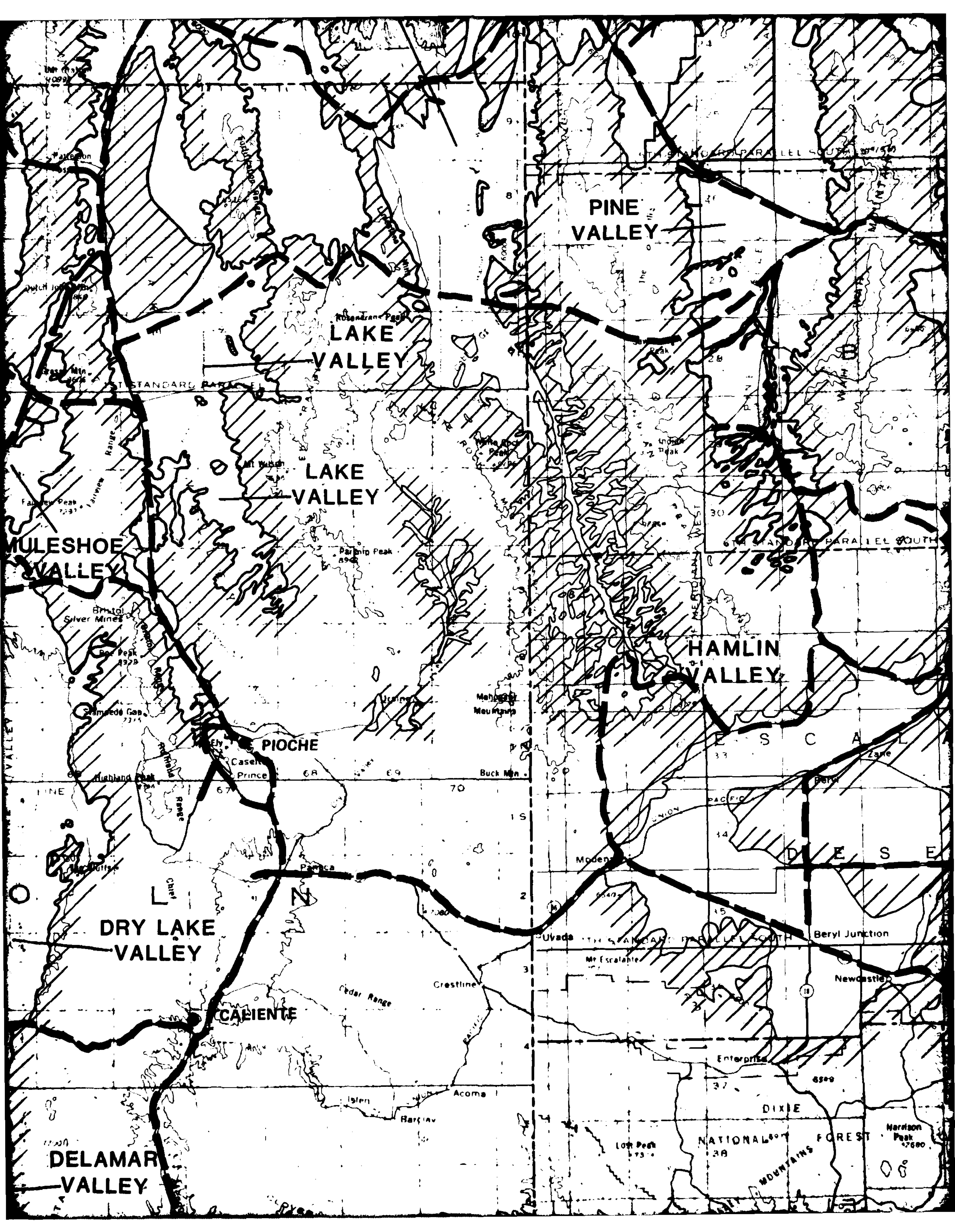


Little Pilot Peak
Table Mtn
Pilot Peak
Saylor Peak
Manhattan
Bald Mtn
Lime Mtn
Red Mtn
Booker Mtn
TONOPAH
Siebert Mtn
Mt Butler
Lone Mtn
GUIDE
MERIDIAN
38° 00'
Emigrant Peak
Weepah Hills
35
36
37
38
39
40
41
42
43
44
45
MT DIABLO
BASE
The Monocline
Silverpeak
Red Mtn
E S M E R A L D A
Clayton Valley
Fish Lake Valley
Piper Peak
Columbia Mtn
Goldfield
GOLDFIELD
Montezuma Peak
Blackcap Mtn
Stonewall Flat
NEVADA
CALIFORNIA
Oasis
Palmetto Mtn
Lida
Mt Jackson
Magruder Mtn
Piper Mtn
Deer Springs
NELLIS

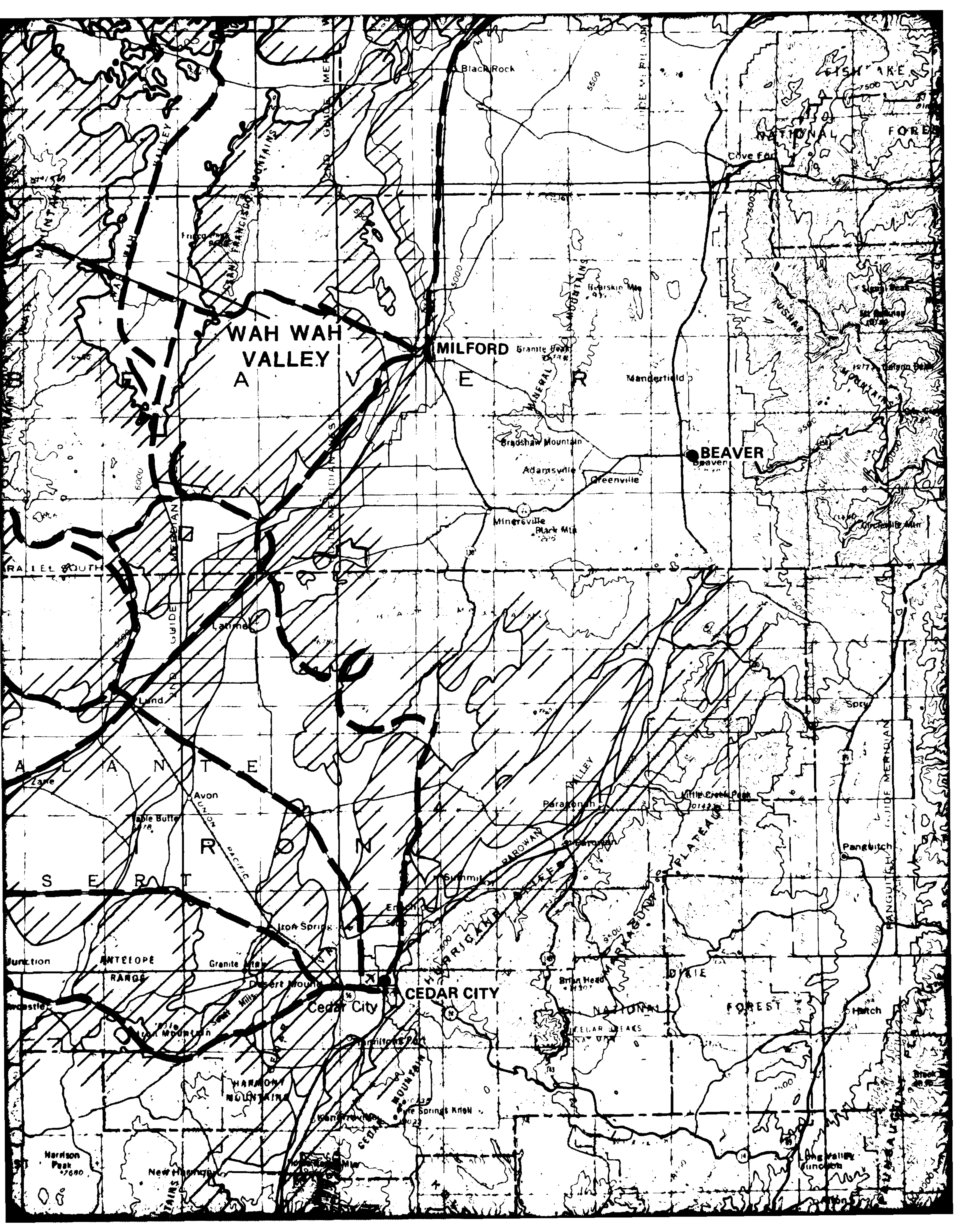

HOT CREEK
VALLEY
STONE CABIN
VALLEY
RALSTON
VALLEY
REVEILLE
VALLEY
RAILROAD
VALLEY
PENOYER
VALLEY
NELLIS
Warm Springs
Black Butte
Lunar Crater
Black Rock
Summit
Rocky Peak
Big Tax
Peak
Sheep Mtn
Rawhide Mtn
Monitor Peak
Monitor
Hills
Cedar Pass
Gold Mtn
Quartzite Mtn
Wheelbarrow Peak
STANDARD
E
Y



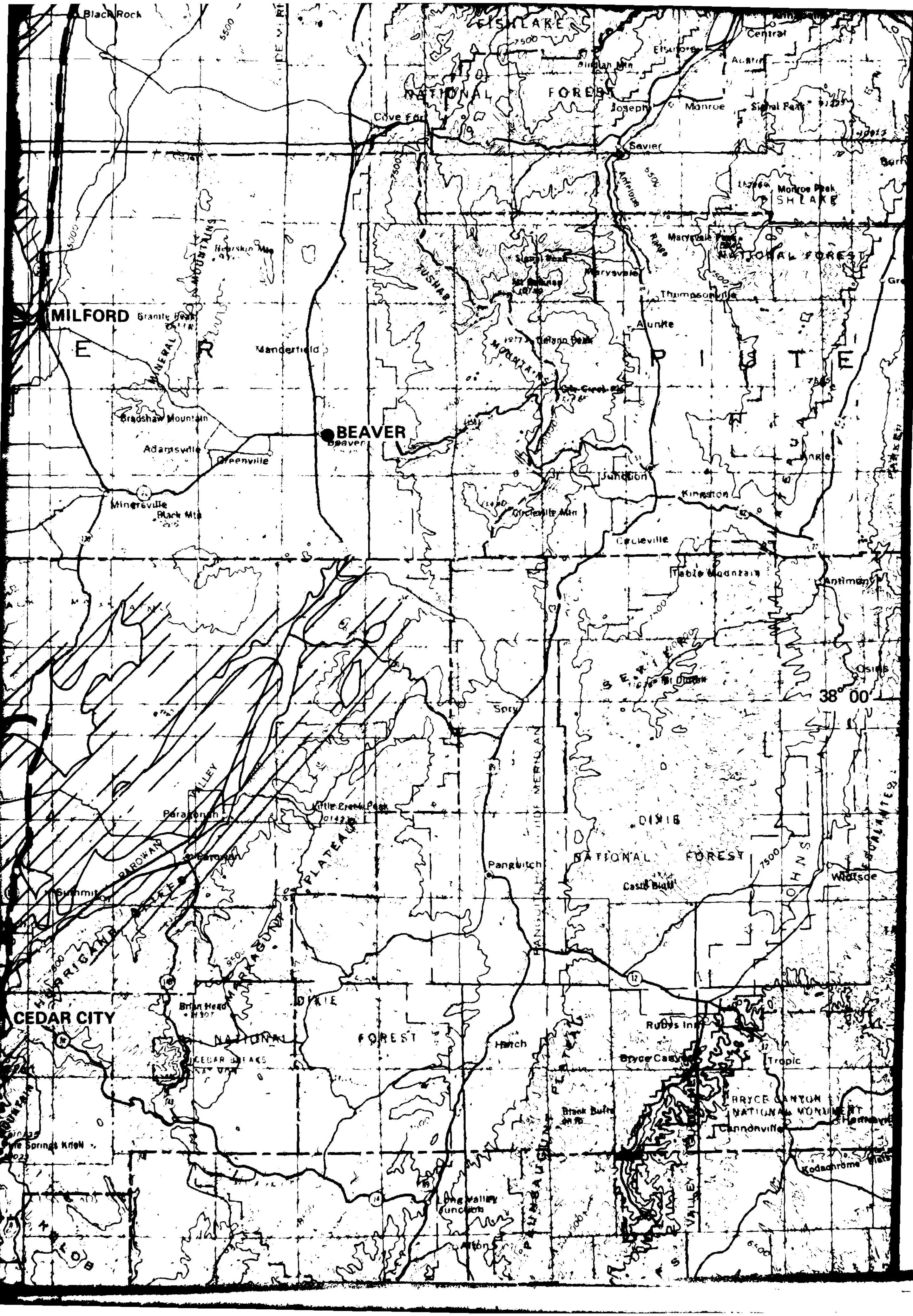
CAVE VALLEY
WHITE RIVER VALLEY
RAILROAD VALLEY
GARDEN VALLEY
PENOYER VALLEY
MULESHOE VALLEY
COAL VALLEY
DRY LA
VALLE
PAHROC VALLEY
DELAMAR VALLEY



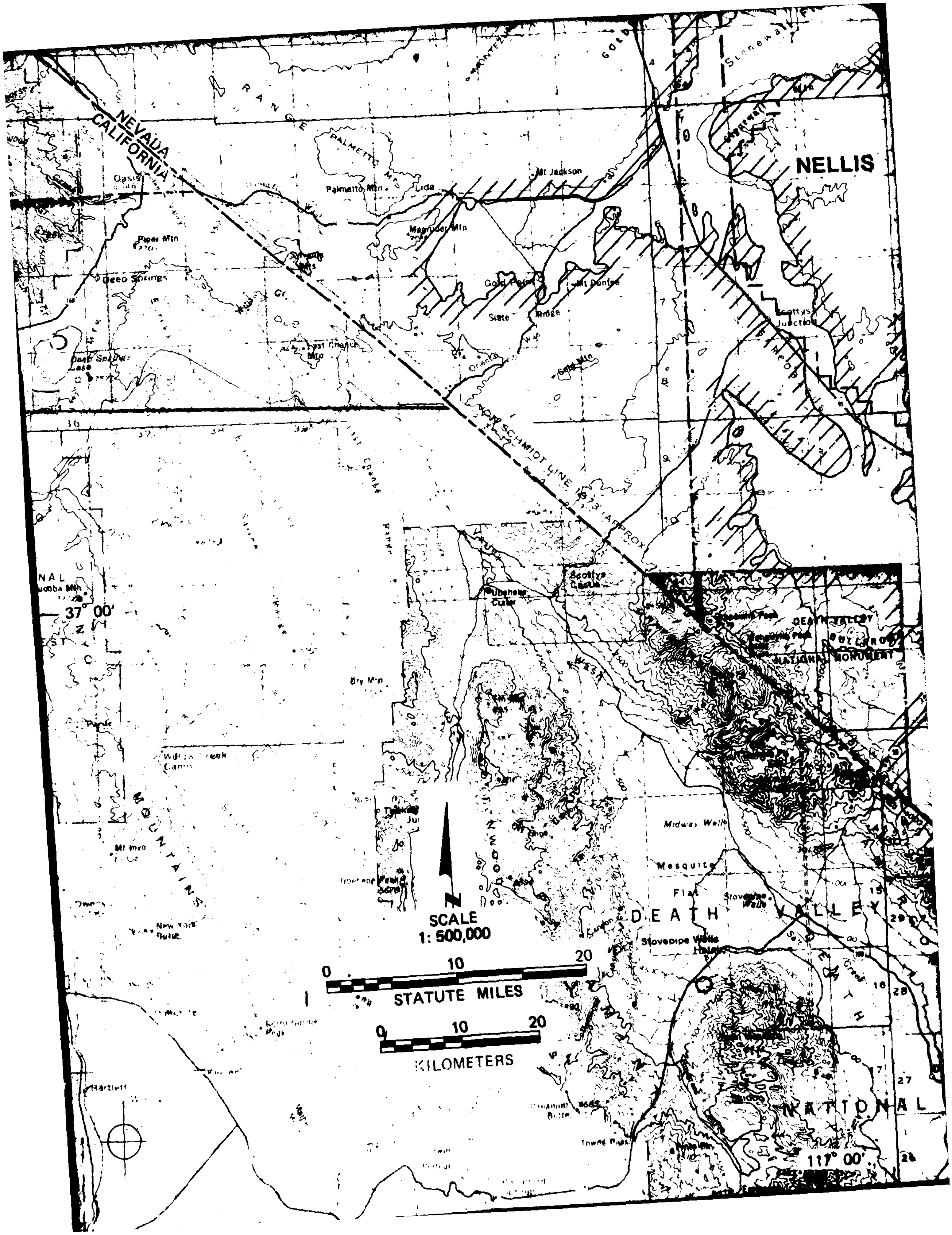
PINE VALLEY
LAKE VALLEY
LAKE VALLEY
MULESHOE VALLEY
HAMLIN VALLEY
PIOCHE
DRY LAKE VALLEY
CALIENTE
DELAMAR VALLEY
Bristol Silver Mines
Highland Peak
Parsnip Peak
Caselton
Prince
Panaca
Modena
Uvada
Beryl Junction
Newcastle
Crestline
Cedar Range
Enterprise
Acoma
Islen
Barclay
Lost Peak
DIXIE
NATIONAL FOREST
Harrison Peak
Mt Escalante
Beryl
Zane
Buck Mtn
Stampede Gap
Rosencrans Peak
Dutch John Mtn
Fairview Peak
Patterson
Indian Peak
Mahogany Mountains

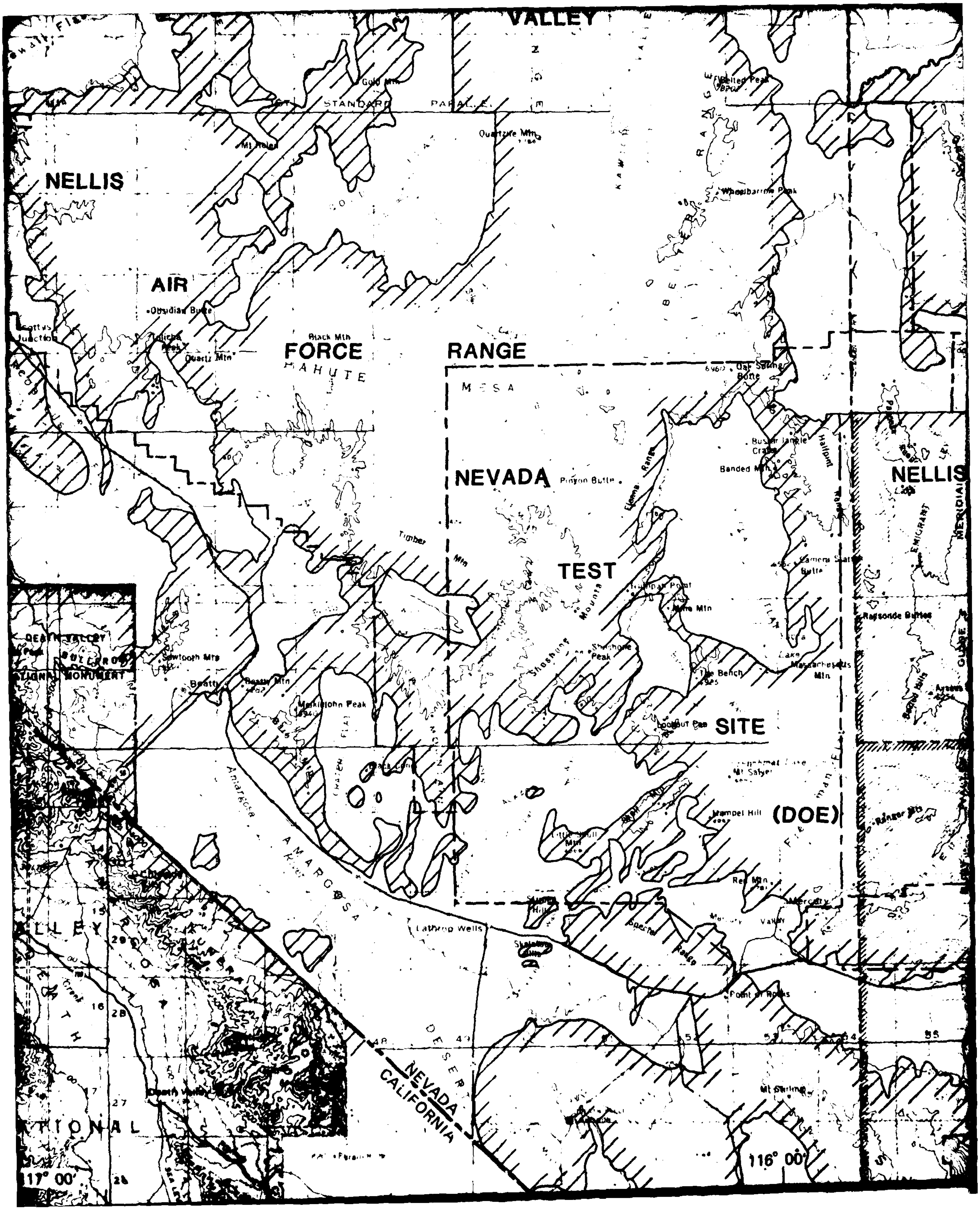


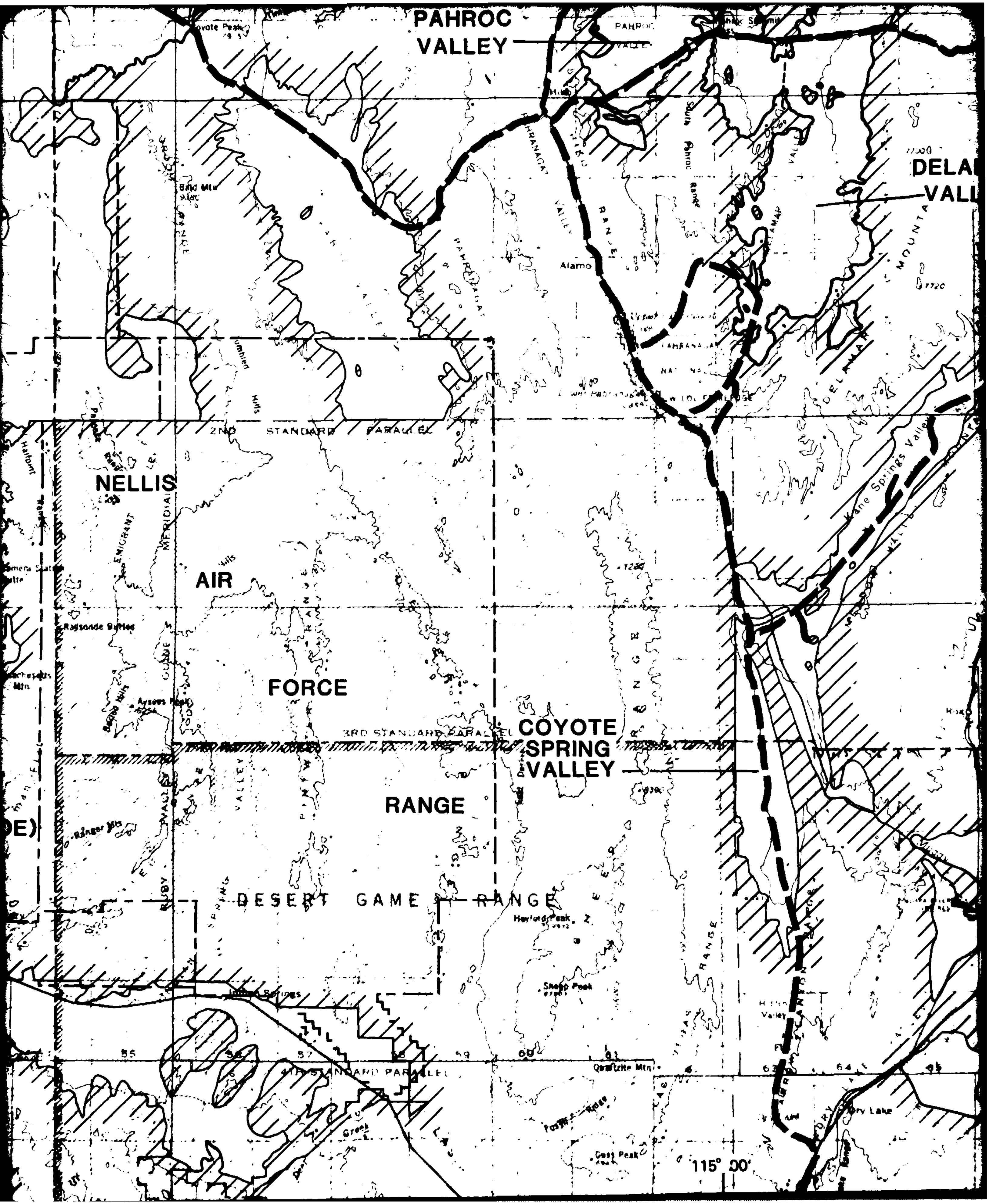
Black Rock
WAH WAH VALLEY
MILFORD
BEAVER
Frisco
Bearskin Mtn
Granite Peak
Mandertield
Bradshaw Mountain
Adamsville
Greenville
Minersville
Black Mtn
Cove Fort
NATIONAL
FISH LAKE
TUSHAR
MOUNTAINS
SAN FRANCISCO
MINERAL MOUNTAINS
Latimer
Lund
Zane
Avon
Table Butte
UNION PACIFIC
Iron Springs
Enoch
Summit
Paragonah
Parowan
PAROWAN
VALLEY
Little Creek Peak
MARKAGUNT
PLATEAU
Panguitch
PANGUITCH
Spry
Granite Mtn
ANTELOPE
RANGE
Desert Mound
Cedar City
CEDAR CITY
Junction
Newcastle
Iron Mountain
Hamiltons Fort
HARMONY
MOUNTAINS
Kanarraville
CEDAR
MOUNTAIN
Brian Head
CEDAR BREAKS
DIXIE
NATIONAL
FOREST
Hatch
Harrison Peak
7680
New Harmony
Long Valley Junction
HURRICANE CLIFFS
GUIDE MERIDIAN
5000
5500
6000
7500
9500



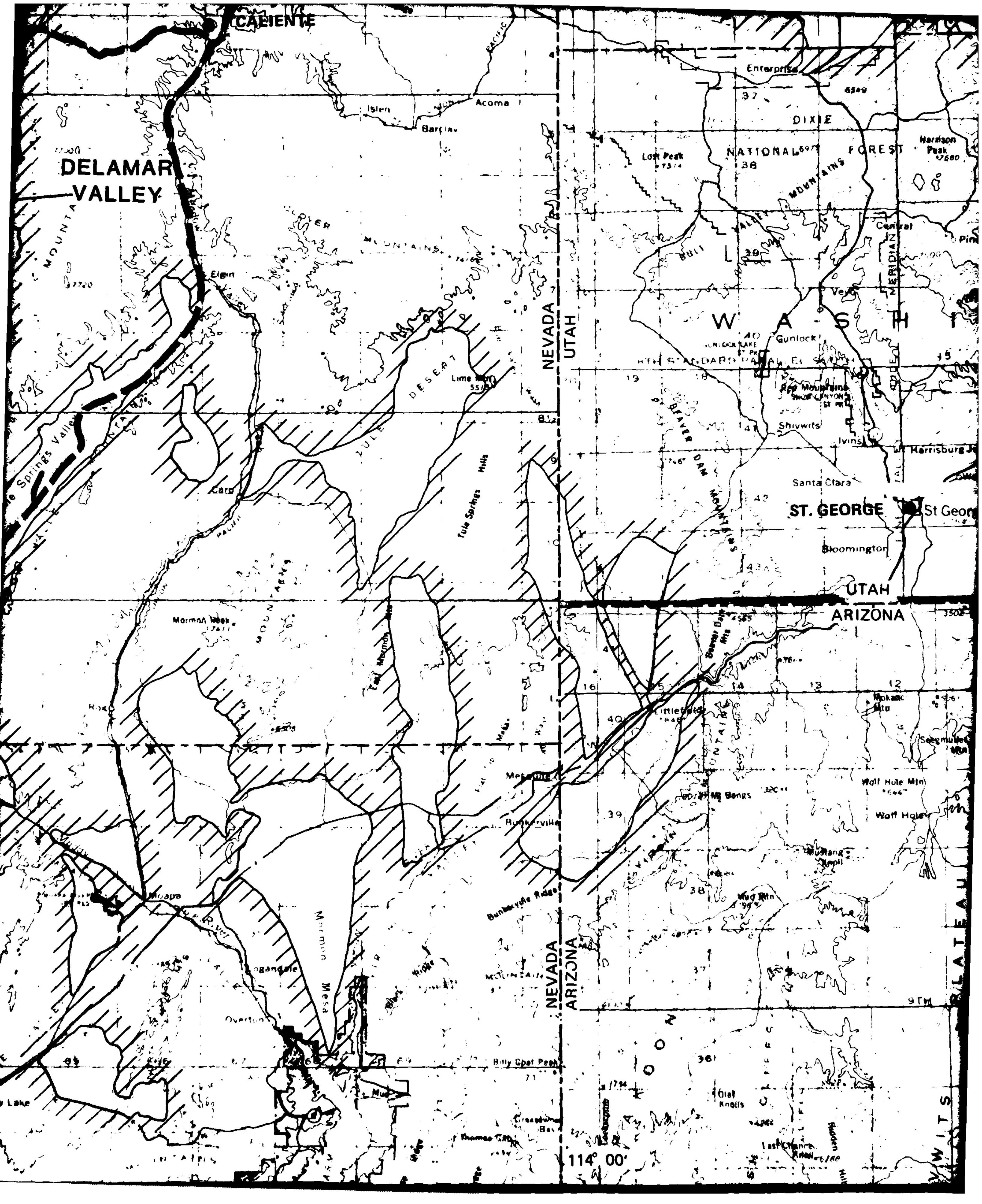
Black Rock
FISHLAKE
Central
Elsinore
NATIONAL FOREST
Joseph
Monroe
Signal Peak
Cove Fort
Sevier
Monroe Peak
Marysvale Peak
NATIONAL FOREST
TUSHAR
Signal Peak
Marysvale
Thompsonville
MILFORD
Granite Peak
MINERAL
MOUNTAINS
Manderfield
Alunite
Delano Peak
MOUNTAINS
PIUTE
Bradshaw Mountain
BEAVER
Beaver
Adamsville
Greenville
Junction
Kingston
Minersville
Black Mtn
Circleville Mtn
Circleville
Table Mountain
Antimony
Osiris
38° 00'
Spry
Little Creek Peak
Paragonah
PAROWAN
Parowan
Summit
HURRICANE
PLATEAU
DIXIE
NATIONAL FOREST
Panguitch
Castle Bluff
Widtsoe
Brian Head
CEDAR CITY
DIXIE
NATIONAL
FOREST
Hatch
Rubys Inn
Bryce Canyon
Tropic
CEDAR BREAKS
Black Butte
BRYCE CANYON
NATIONAL MONUMENT
Cannonville
Kodachrome Flats
Long Valley Junction
Alton
VALLEY


NEVADA
CALIFORNIA
NELLIS
Mt Jackson
Palmetto Mtn
Lida
Magruder Mtn
Gold Point
Mt Dunfee
State
Ridge
Scottys Junction
Deep Springs
Deep Springs Lake
Oasis
Piper Mtn
Gold Mtn
NEW SCHMIDT LINE 1873 (APPROX)
Scottys Castle
Ubehebe Crater
DEATH VALLEY
NATIONAL MONUMENT
37° 00'
Dry Mtn
Midway Well
Mesquite
Flat
Stovepipe Wells
DEATH VALLEY
MOUNTAINS
Mt Inyo
New York Butte
Hartlett
Towne Pass
117° 00'
NATIONAL
SCALE
1: 500,000
0
10
20
STATUTE MILES
KILOMETERS

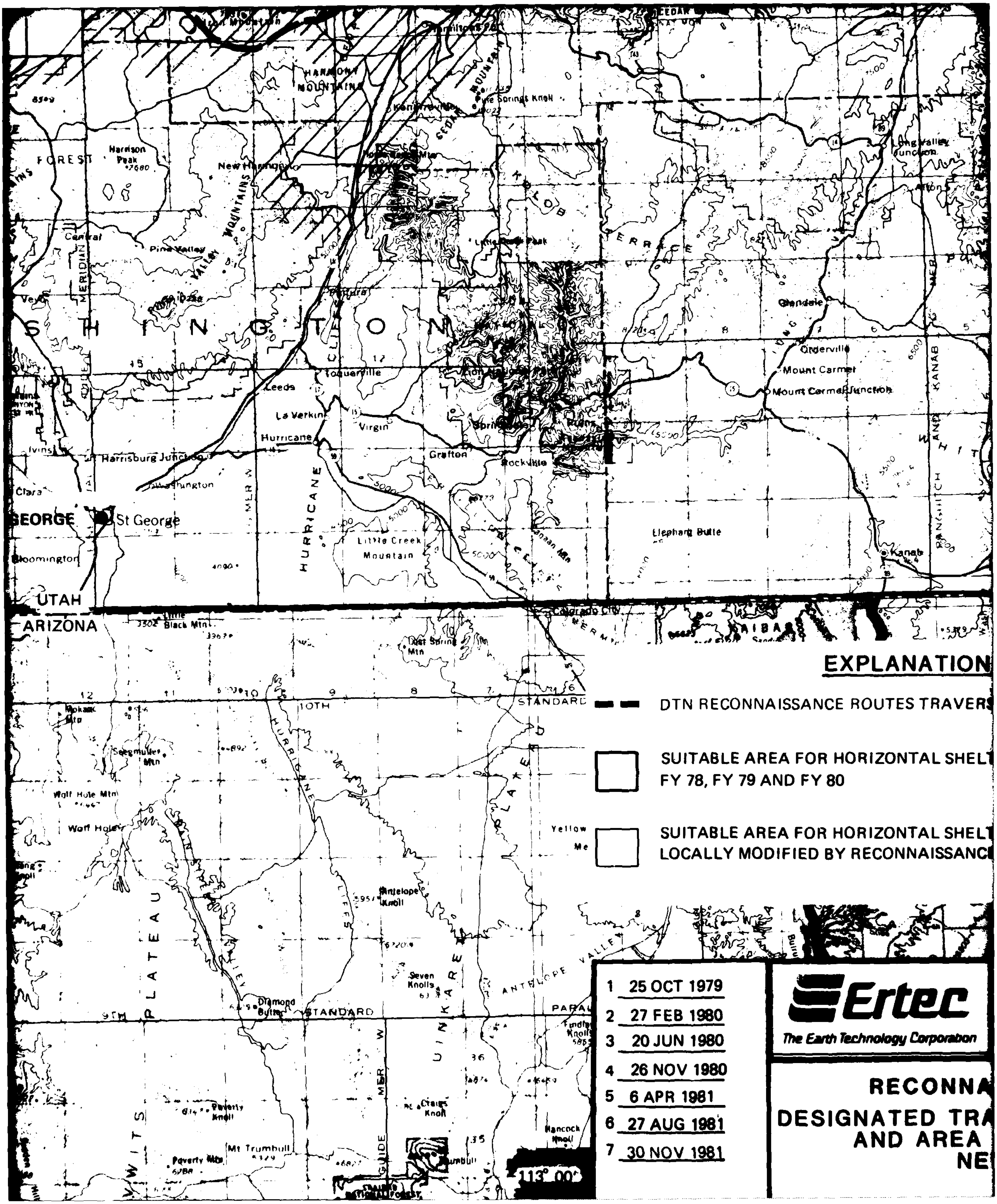

VALLEY
NELLIS
AIR
FORCE
RANGE
NEVADA
TEST
SITE
(DOE)
NELLIS
Gold Mtn
Quartzite Mtn
Mt Helen
Wheelbarrow Peak
Obsidian Butte
Black Mtn
Quartz Mtn
PAHUTE
MESA
Pinyon Butte
Banded Mtn
Timber
Mtn
Shoshone Peak
Shoshone
Beatty
Beatty Mtn
Meiklejohn Peak
Sawtooth Mtn
Lookout Peak
Skull Mtn
Mercury
Red Mtn
Lathrop Wells
Point of Rocks
Mt Sterling
Amargosa
AMARGOSA
DESERT
NEVADA
CALIFORNIA
116° 00'
117° 00'
DEATH VALLEY
NATIONAL MONUMENT
Ranger Mts
Indian Springs
STANDARD PARALLEL
EMIGRANT
MERIDIAN

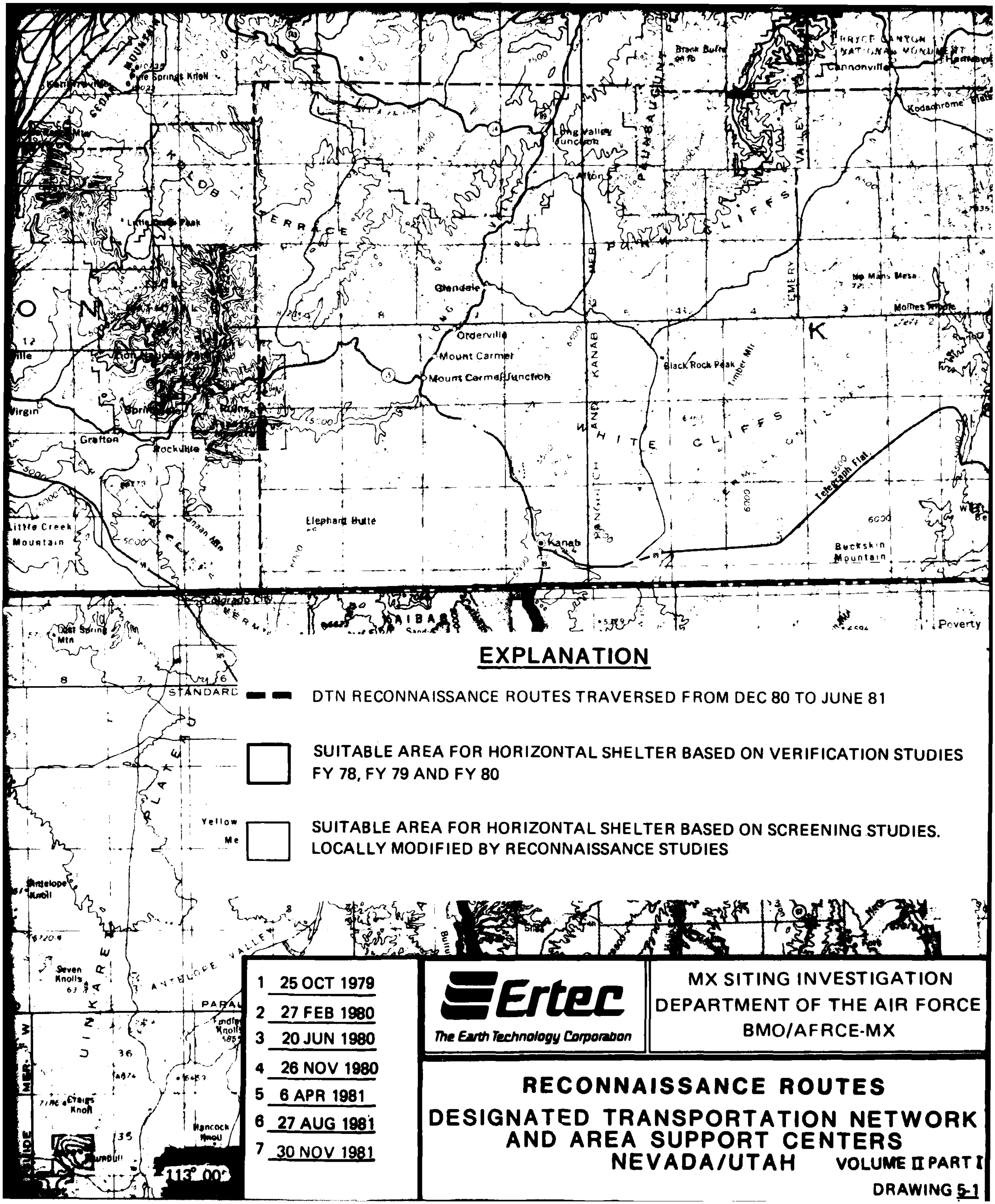


PAHROC
VALLEY
Coyote Peak
Bald Mtn
PAHRANAGAT
Alamo
NELLIS
AIR
FORCE
RANGE
2ND STANDARD PARALLEL
3RD STANDARD PARALLEL
4TH STANDARD PARALLEL
COYOTE
SPRING
VALLEY
Kane Springs Valley
Ayers Peak
Ranger Mts
DESERT GAME RANGE
Hayford Peak
Sheep Peak
Quartzite Mtn
Gass Peak
Dry Lake
55
56
57
58
59
60
61
63
64
65
115° 00'



CALIENTE
DELAMAR
VALLEY
Elgin
Carp
Islen
Barclay
Acoma
Lime Mtn
Tule Springs Hills
Mormon Peak
Moapa
Logandale
Overton
Mesquite
Bunkerville
Bunkerville Ridge
Billy Goat Peak
Mormon Mesa
NEVADA
UTAH
NEVADA
ARIZONA
Enterprise
DIXIE
NATIONAL
FOREST
Harrison Peak
Lost Peak
BULL VALLEY MOUNTAINS
Central
Veyo
W A S H
Gunlock
Shivwits
Ivins
Harrisburg Jct
Santa Clara
ST. GEORGE
St George
Bloomington
BEAVER DAM MOUNTAINS
UTAH
ARIZONA
Littlefield
Mokaac Mtn
Wolf Hole Mtn
Wolf Hole
Mustang Knoll
Mud Mtn
Seegmuller Mtn
Last Chance
114° 00′
PLATEAU


EXPLANATION
DTN RECONNAISSANCE ROUTES TRAVERS
SUITABLE AREA FOR HORIZONTAL SHELT
FY 78, FY 79 AND FY 80
SUITABLE AREA FOR HORIZONTAL SHELT
LOCALLY MODIFIED BY RECONNAISSANC
1 25 OCT 1979
2 27 FEB 1980
3 20 JUN 1980
4 26 NOV 1980
5 6 APR 1981
6 27 AUG 1981
7 30 NOV 1981
Ertec
The Earth Technology Corporation
RECONNA
DESIGNATED TRA
AND AREA
NE
UTAH
ARIZONA
St George
Hurricane
La Verkin
Toquerville
Leeds
Virgin
Grafton
Rockville
Orderville
Mount Carmel
Mount Carmel Junction
Glendale
Kanab
Elephant Butte
Little Creek
Mountain
Harrisburg Junction
Washington
Bloomington
Ivins
Pine Valley
New Harmony
HARMONY
MOUNTAINS
Harrison
Peak
FOREST
Central
Veyo
Clara
Long Valley
Junction
Colorado City
Little
Black Mtn
Wolf Hole Mtn
Wolf Hole
Antelope
Knoll
Seven
Knolls
Diamond
Butte
Poverty
Knoll
Mt Trumbull
Poverty Mtn
Hancock
Knoll
STANDARD
10TH
9TH
HURRICANE
KOLOB
TERRACE
PLATEAU
ANTELOPE VALLEY
113° 00'



EXPLANATION

DTN RECONNAISSANCE ROUTES TRAVERSED FROM DEC 80 TO JUNE 81

SUITABLE AREA FOR HORIZONTAL SHELTER BASED ON VERIFICATION STUDIES FY 78, FY 79 AND FY 80

SUITABLE AREA FOR HORIZONTAL SHELTER BASED ON SCREENING STUDIES. LOCALLY MODIFIED BY RECONNAISSANCE STUDIES

1	25 OCT 1979
2	27 FEB 1980
3	20 JUN 1980
4	26 NOV 1980
5	6 APR 1981
6	27 AUG 1981
7	30 NOV 1981

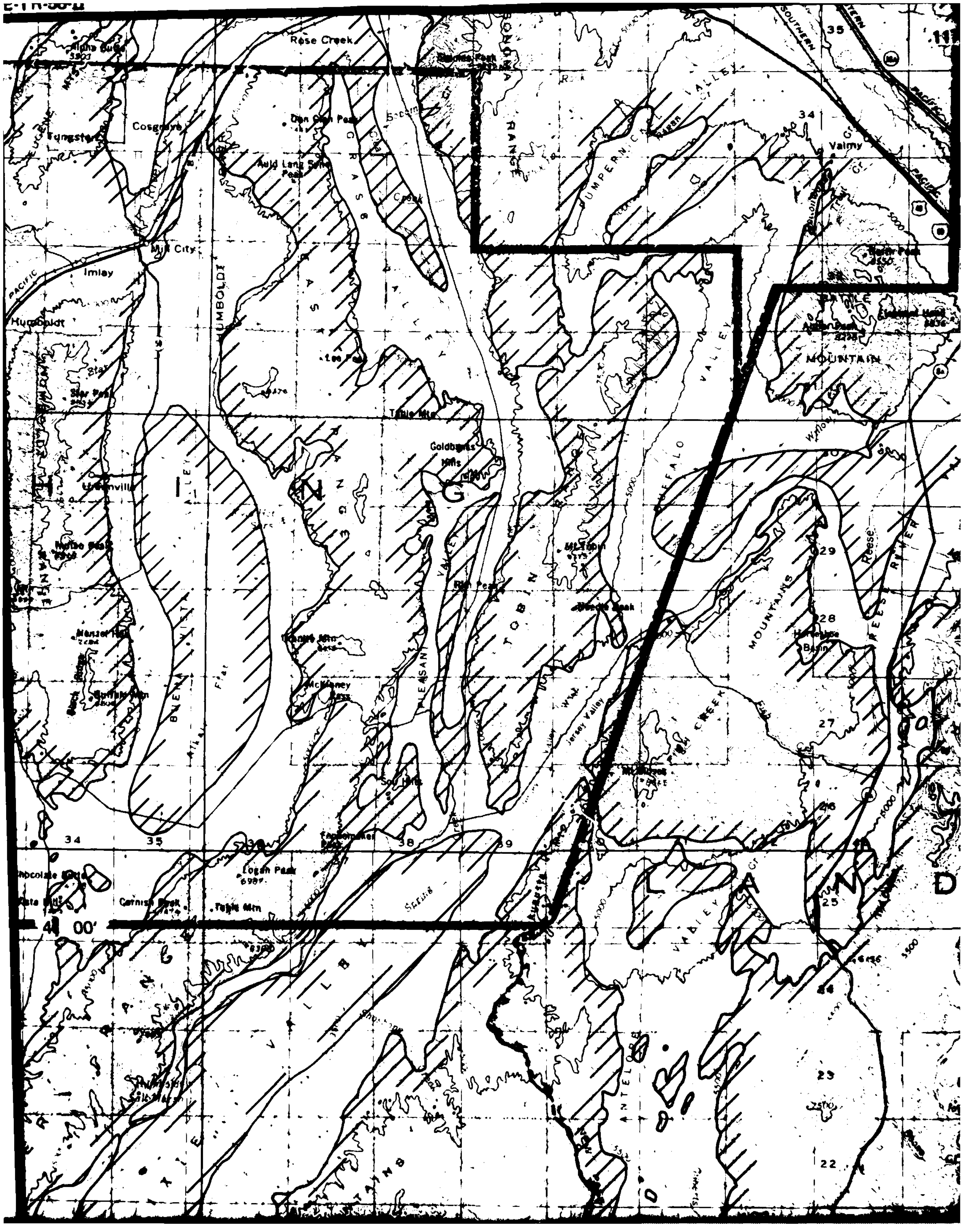
Ertec
The Earth Technology Corporation

MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

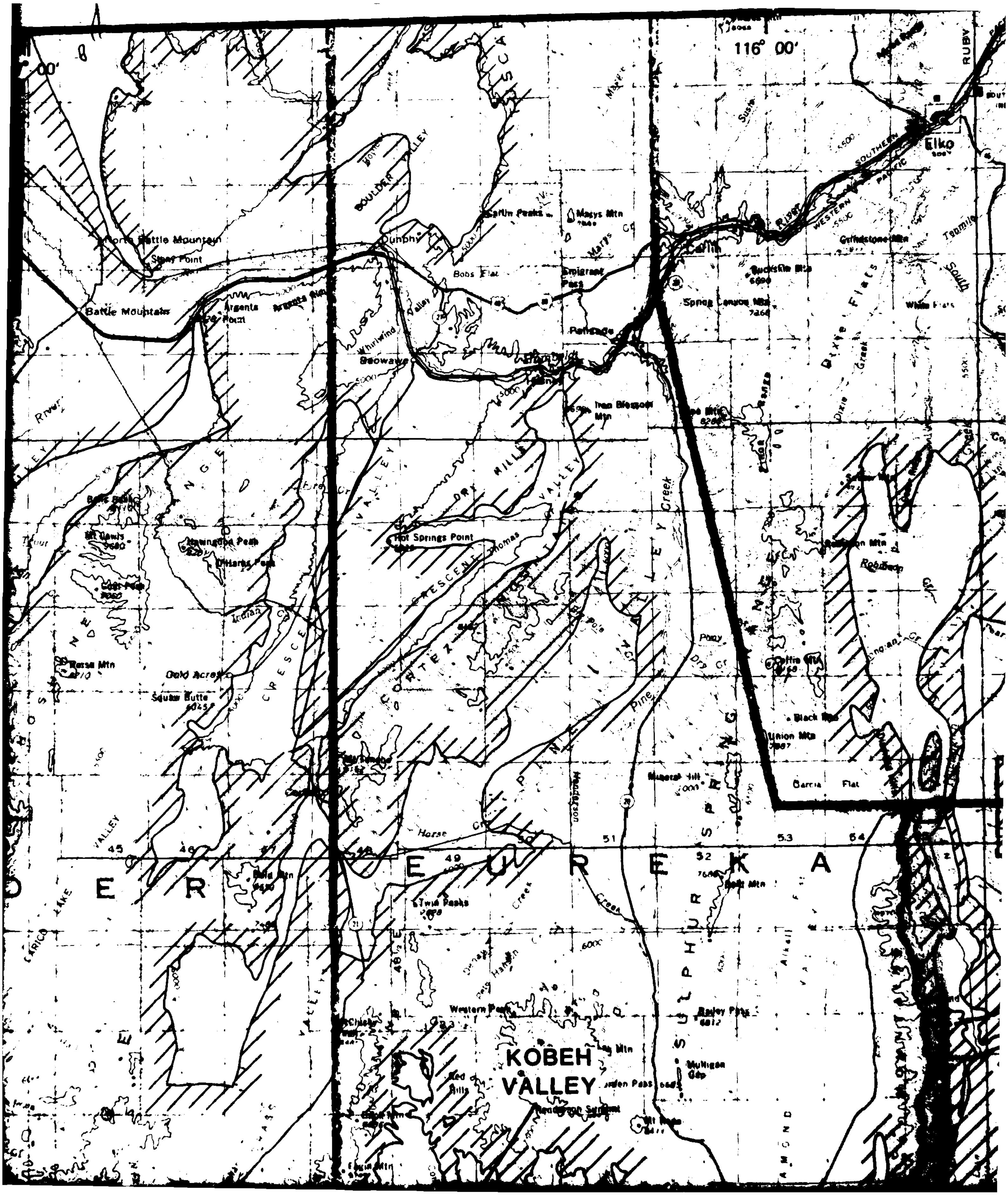
RECONNAISSANCE ROUTES
DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS
NEVADA/UTAH

VOLUME II PART I

DRAWING 5-1



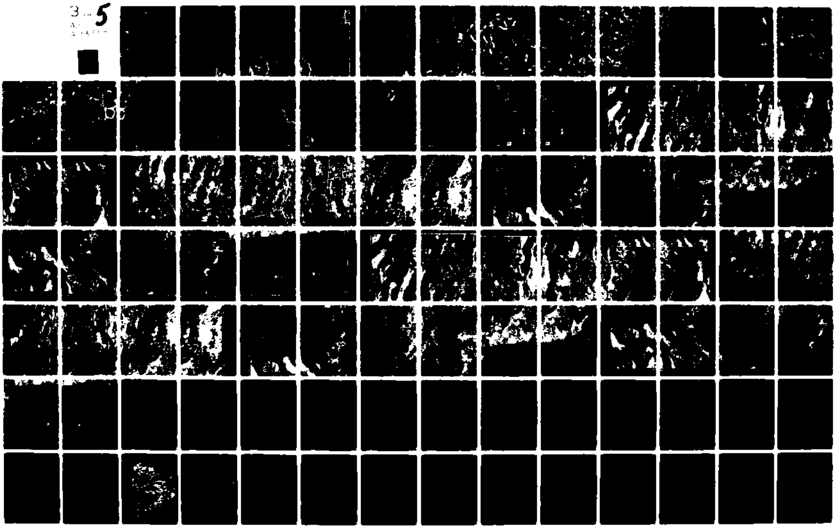
Rose Creek
Tungsten
Cosgrave
Mill City
Imlay
PACIFIC
Humboldt
HUMBOLDT
Dun Glen Peak
Auld Lang Syne Peak
Lee Peak
Table Mtn
Goldbanks Hills
Star Peak
Unionville
Buffalo Mtn
Granite Mtn
McKinney Pass
Sou Hills
Mt Tobin
TOBIN
BUFFALO
VALLEY
Jersey Valley
Mt Moses
MOUNTAIN
MOUNTAINS
CREEK
Valmy
SOUTHERN
Reese
RIVER
Horseshoe Basin
Logan Peak
Cornish Peak
Table Mtn
41° 00′
34
35
36
38
39
22
23
24
25
26
27
28
29
L A N D



116° 00'
Elko
Carlin
Battle Mountain
North Battle Mountain
Stony Point
Argenta
Dunphy
Beowawe
Carlin Peaks
Marys Mtn
Emigrant Pass
Bobs Flat
Whirlwind Valley
Palisade
Iron Blossom Mtn
Bucksin Mtn
Spring Canyon Mtn
Grindstone Mtn
White Flats
Dixie Flats
Hot Springs Point
BOULDER VALLEY
CRESCENT VALLEY
CORTEZ
PINE VALLEY
DRY HILLS
Gold Acres
Squaw Butte
Mt Lewis
Lander Peak
Union Mtn
Black Mtn
Mineral Hill
Garcia Flat
Twin Peaks
Western Peak
Bailey Peak
Mulligan Gap
KOBEH VALLEY
Red Hills
E U R E K A
45
46
47
48
49
51
52
53
54

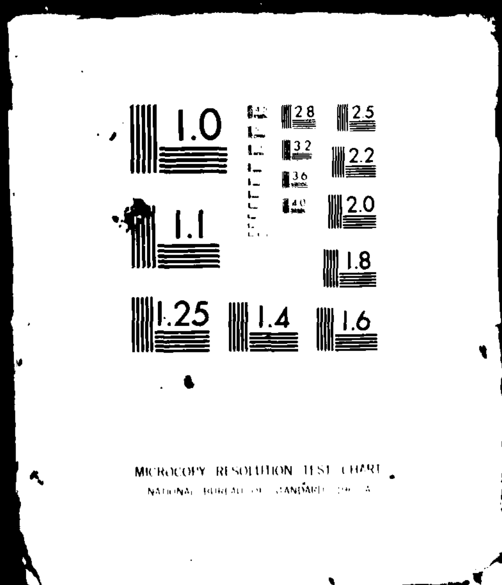
AD-A113 217 ERTEC WESTERN INC LONG BEACH CA F/G 16/1
MX SITING INVESTIGATION. MX SYSTEM SITING SUMMARY REPORT. DTN/A--ETC(U)
JAN 82 F04704-80-C-0006
UNCLASSIFIED E-TR-58-VOL-2 NL

3 of 5

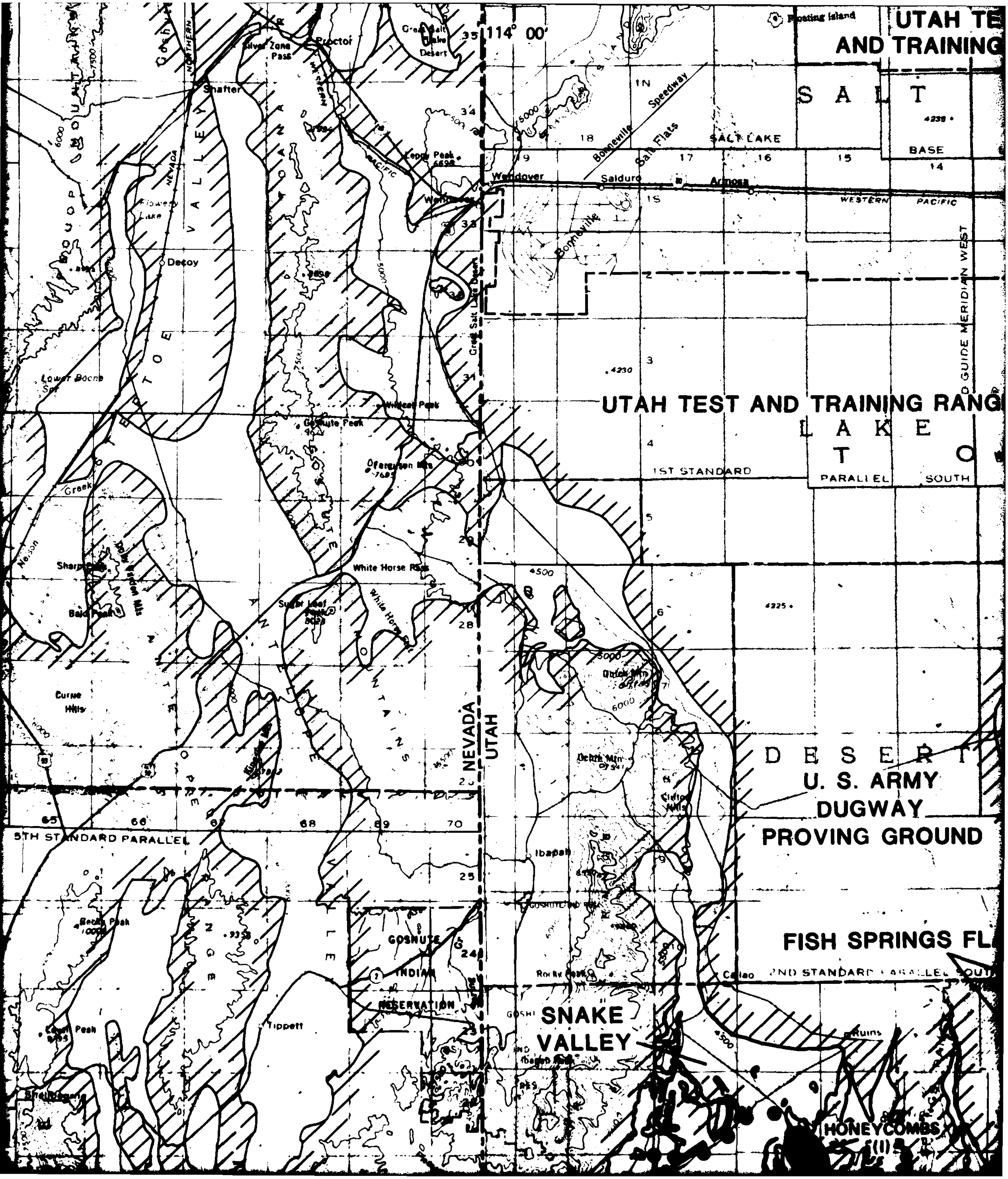


3 OF 5

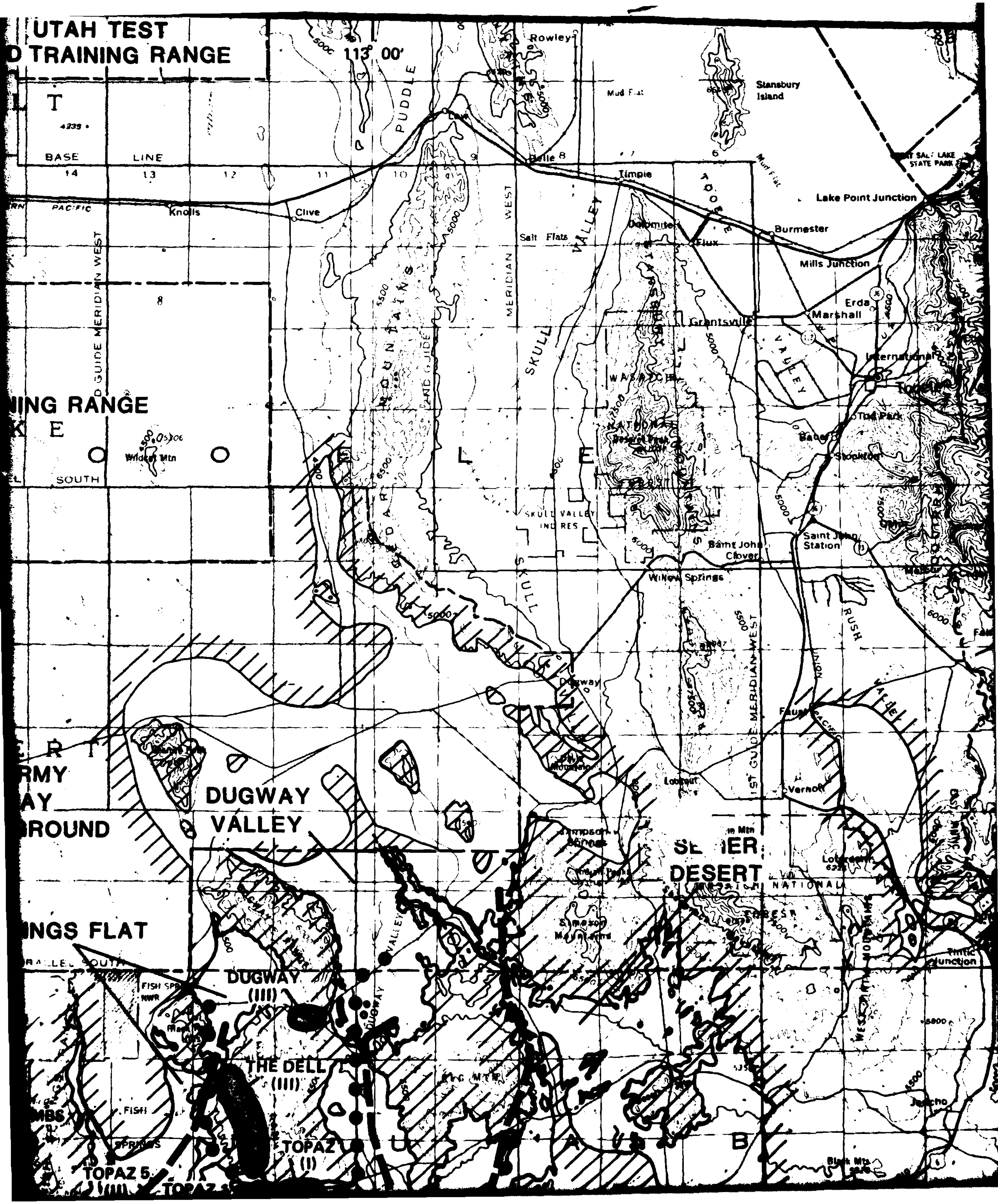
AD-A113217

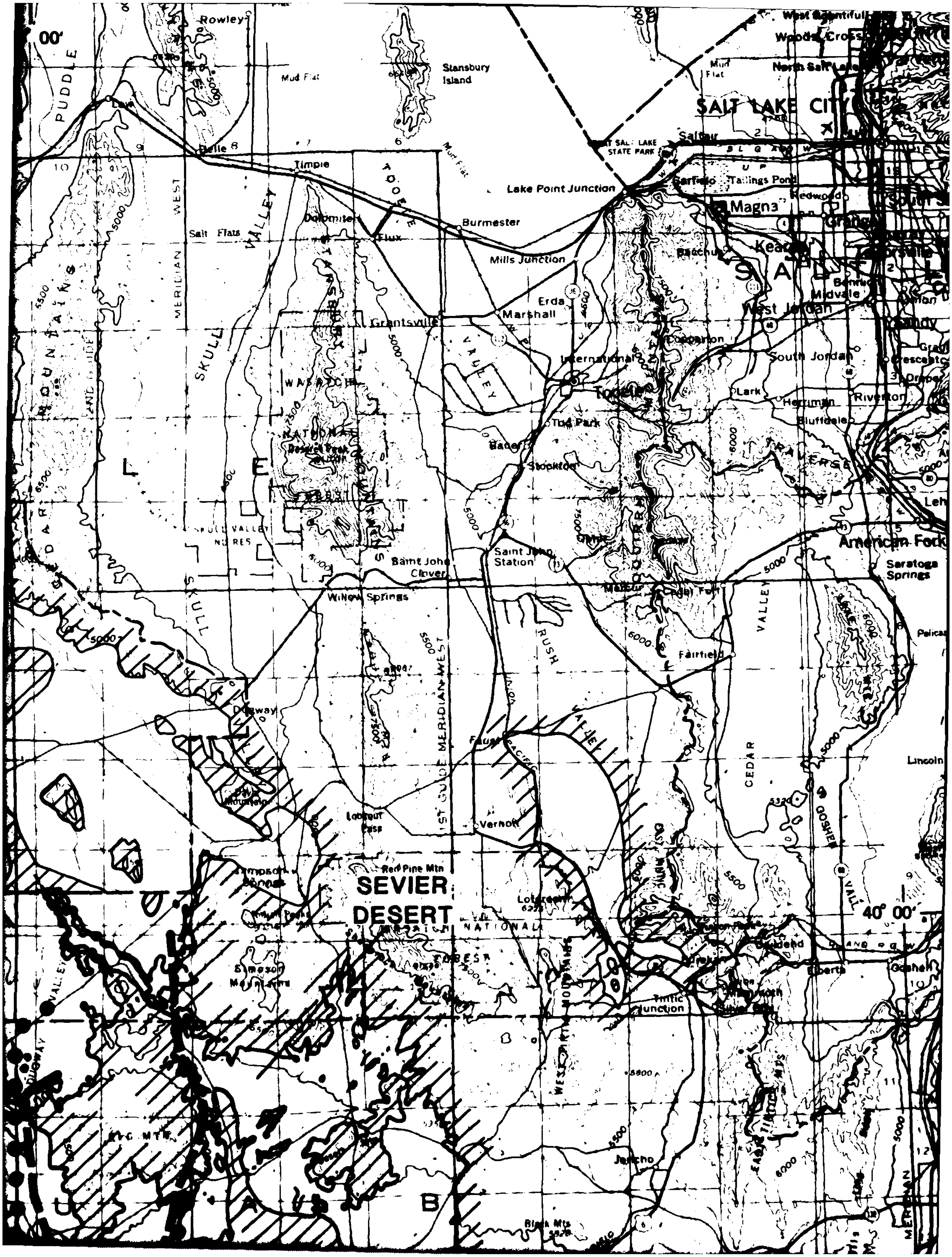


115° 00'
Elburz
Elko Mtn
Elko
Tobar
Snow Water Lake
Chase Spr
Flowery Lake
Decoy
Arthur
HUMBOLDT
Lamoille
SOUTH FORK IND RES
Valley Mtn
Lone Butte
Spruce Mtn
Lower Boone Spr
6TH STANDARD PARALLEL
Dry Lake Flat
FRANKLIN LAKE
Ruby Valley
Odger Buttes
West Butte
FOREST
High Bald Peak
Currie
Currie Hills
Sharp Peak
Bald Peak
Goshute Lake
60
61
62
63
64
65
66
5TH STANDARD PARALLEL
Becky Peak
Cherry Creek
Little Bald Mtn
Big Bald Mtn
Cave Peak
Nelson
Greek
VALLEY
STEPTOE

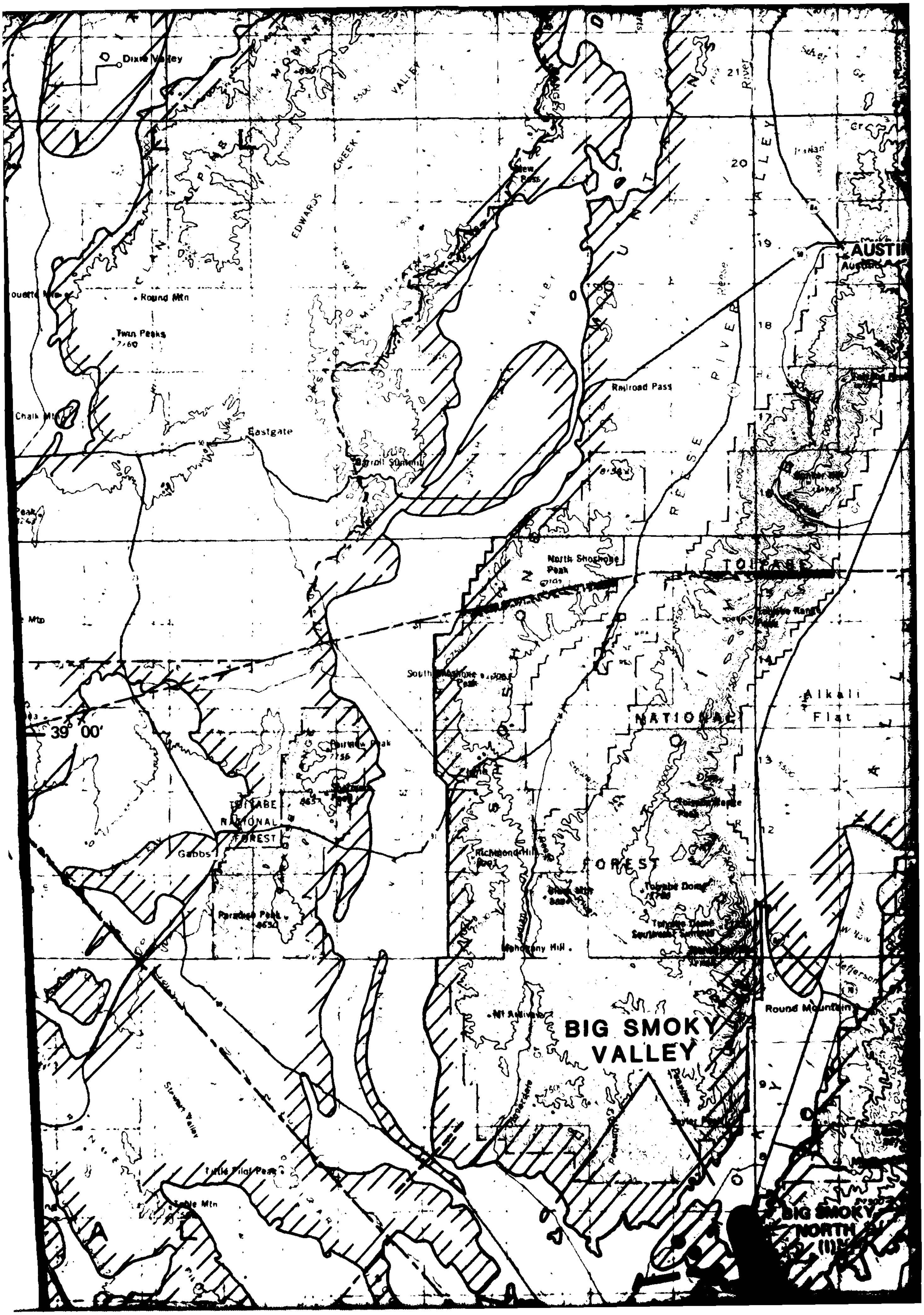


UTAH TEST AND TRAINING
114° 00′
Floating Island
S A L T
L A K E
1N
Bonneville Speedway
Bonneville Salt Flats
SALT LAKE
BASE
Wendover
Salduro
Arinosa
WESTERN PACIFIC
1S
Bonneville
GUIDE MERIDIAN WEST
UTAH TEST AND TRAINING RANG
1ST STANDARD
PARALLEL
SOUTH
D E S E R T
U. S. ARMY
DUGWAY
PROVING GROUND
FISH SPRINGS FL
2ND STANDARD PARALLEL SOUTH
Callao
Ruins
HONEYCOMBS
SNAKE
VALLEY
Ibapah
Rocky Peak
GOSHUTE
INDIAN
RESERVATION
Tippett
NEVADA
UTAH
Great Salt Lake Desert
Shafter
Proctor
Silver Zone Pass
Pilot Peak
Decoy
Flowery Lake
Lower Boone Spr
Goshute Peak
Ferguson Mts
White Horse Pass
Sugar Loaf Peak
Sharp Peak
Bald Peak
Currie Hills
Nelson
Greek
Rocky Peak
5TH STANDARD PARALLEL
65
66
67
68
69
70
Quick Mtn
Dutch Mtn
Clifton Hills
Ibapah

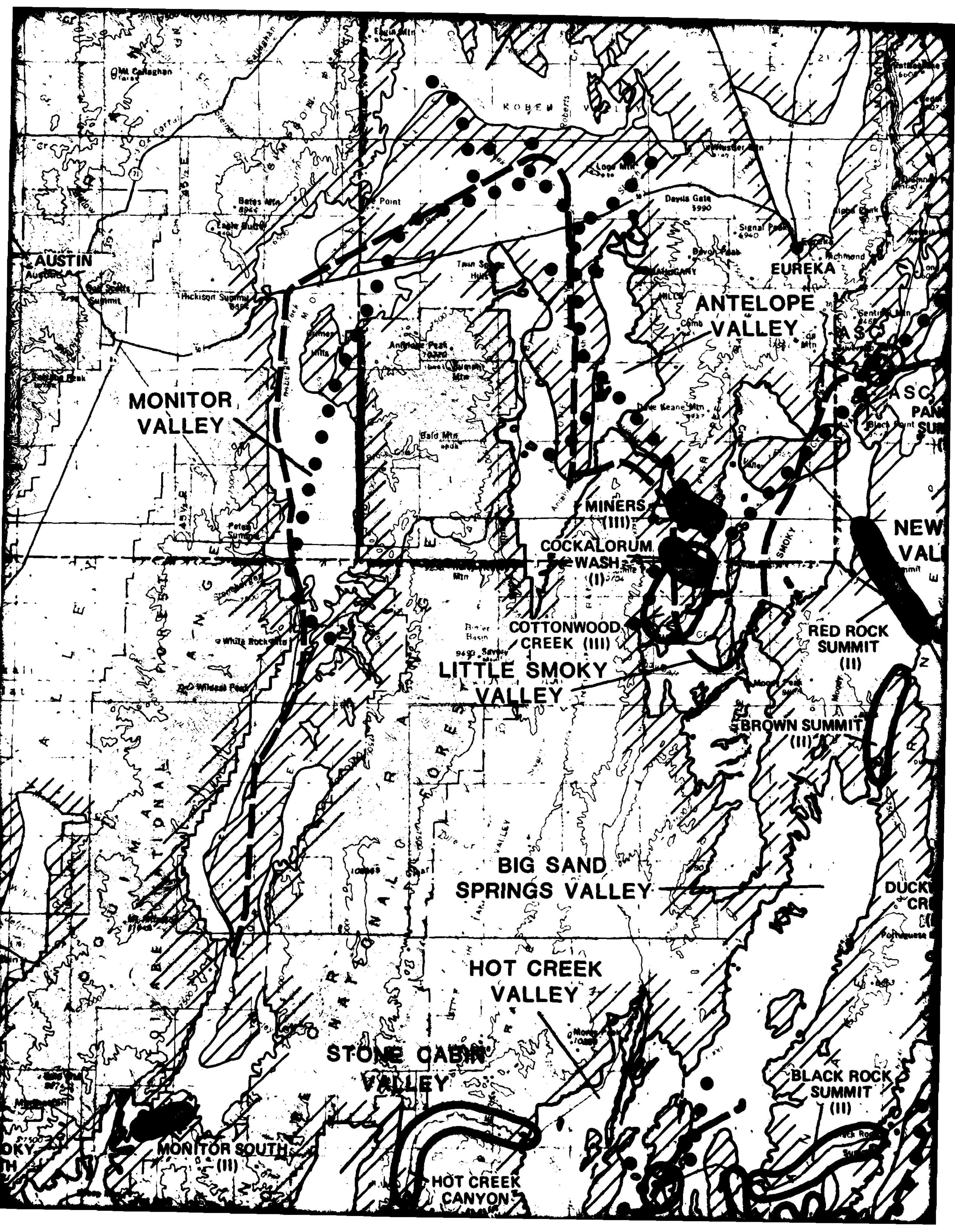

UTAH TEST
D TRAINING RANGE
113° 00'
Rowley
PUDDLE
Mud Flat
Stansbury Island
BASE LINE
Belle
Timpie
Lake Point Junction
Knolls
Clive
Dolomite
Flux
Burmester
Mills Junction
Salt Flats
SKULL VALLEY
MERIDIAN WEST
GUIDE MERIDIAN WEST
Erda
Marshall
Grantsville
International
Tooele
NING RANGE
Wildcat Mtn
SOUTH
Stockton
SKULL VALLEY IND RES
Saint John Station
Saint John
Clover
Willow Springs
RUSH
Dugway
Faust
Lofgreen
Vernon
1ST GUIDE MERIDIAN WEST
RMY
AY
ROUND
DUGWAY VALLEY
SEVIER DESERT
Simpson Springs
NATIONAL
Simpson Mountains
NGS FLAT
Tintic Junction
DUGWAY (III)
FISH SPRINGS NWR
THE DELL (III)
FISH SPRINGS
TOPAZ 5 (III)
TOPAZ (I)
TOPAZ
Jericho
Black Mts



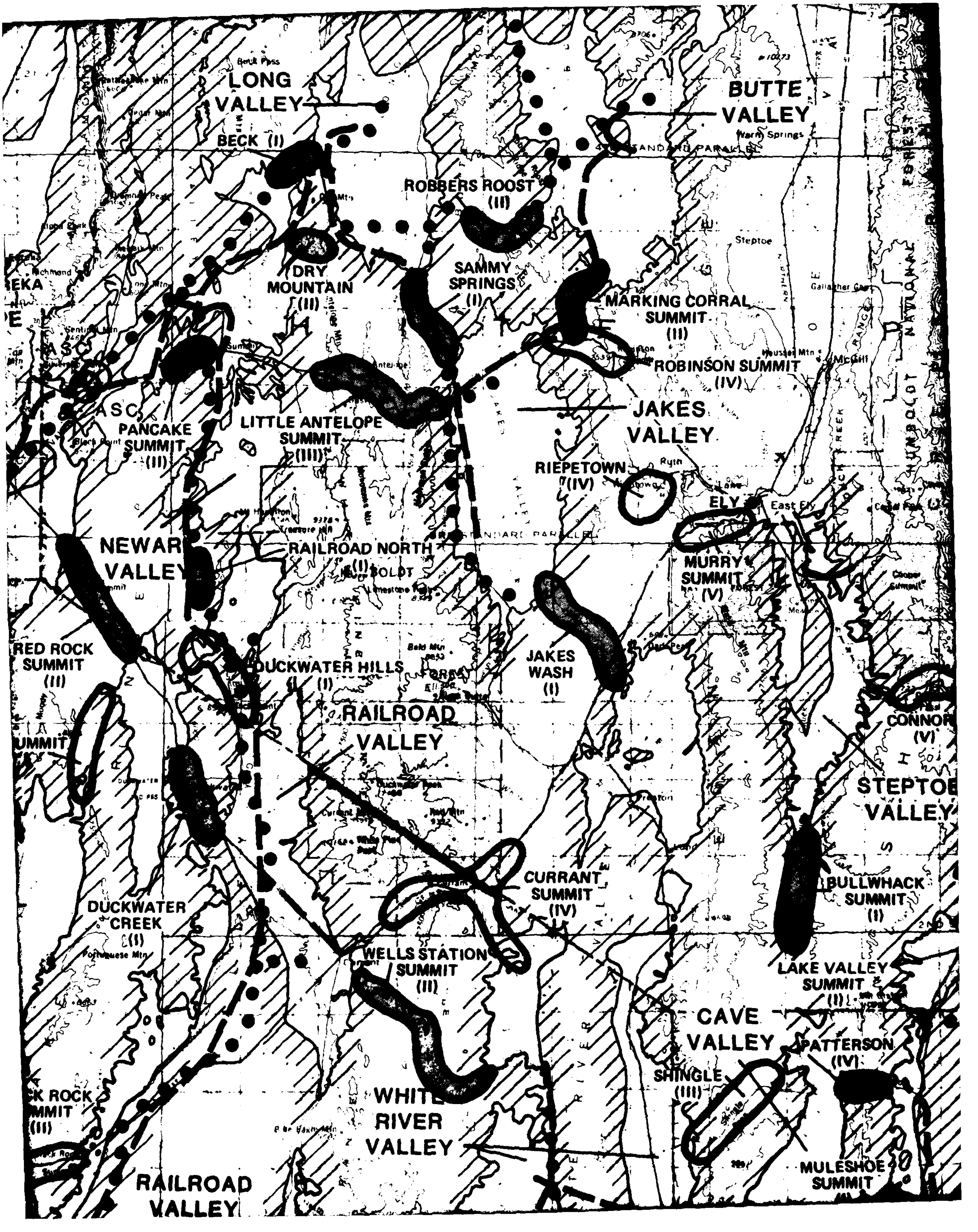
Rowley
Stansbury Island
Mud Flat
SALT LAKE CITY
Saltair
Lake Point Junction
Timpie
Burmester
Mills Junction
Grantsville
Erda
Marshall
Tooele
Magna
Garfield
West Jordan
South Jordan
Herriman
Riverton
Bluffdale
Midvale
Lark
Copperton
Stockton
Bauer
Salt Flats
Dugway
Willow Springs
Saint John Station
Clover
Fairfield
Faust
Vernon
Lookout Pass
Red Pine Mtn
SEVIER DESERT
Simpson Springs
Simpson Mountains
Tintic Junction
Jericho
Black Mts
Eureka
Elberta
Goshen
American Fork
Saratoga Springs
Lincoln
Cedar Fort
Mercur
40° 00′

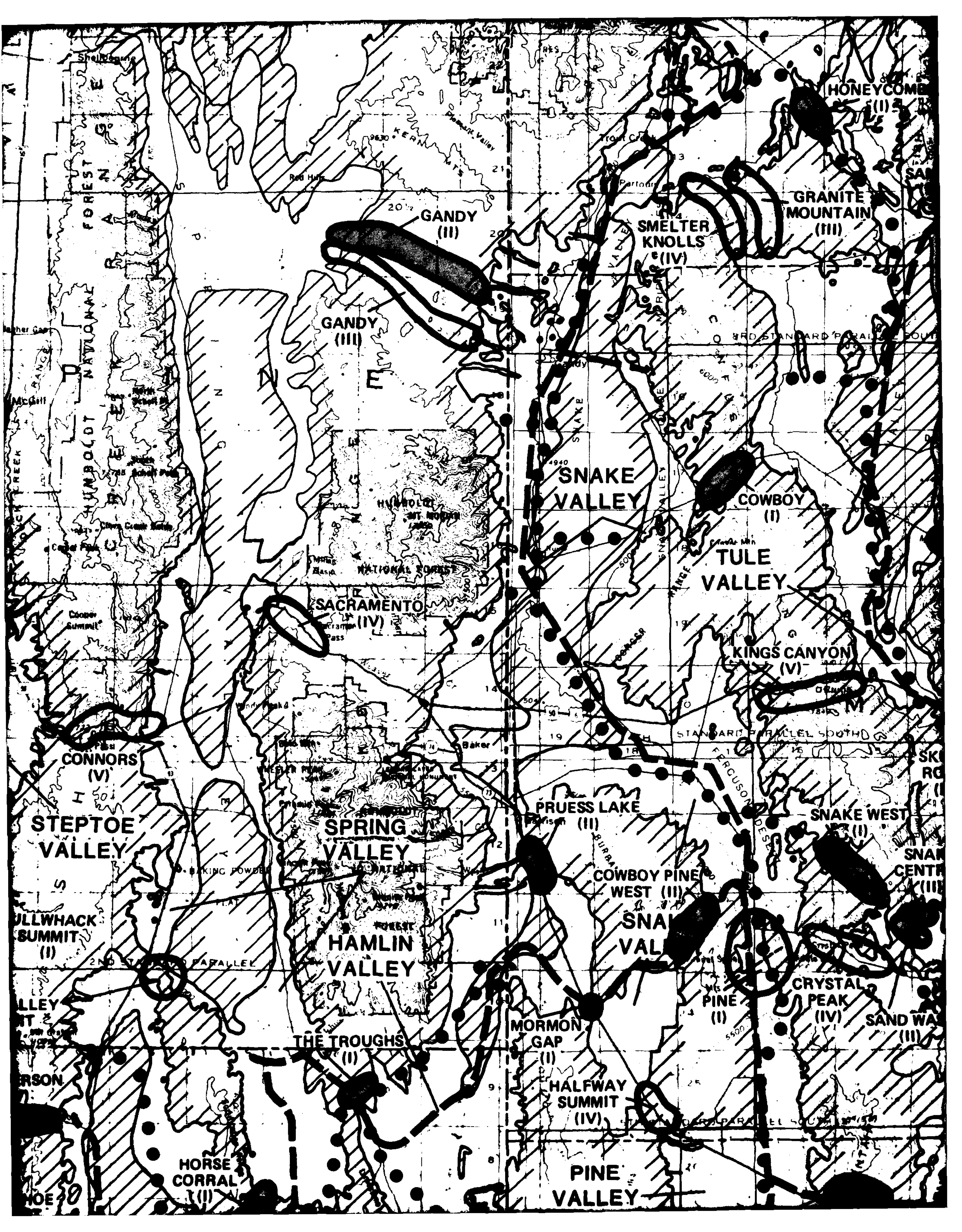


Dixie Valley
EDWARDS CREEK
VALLEY
New Pass
Round Mtn
Twin Peaks
Chalk Mtn
Eastgate
Carroll Summit
Railroad Pass
AUSTIN
Austin
REESE RIVER
VALLEY
North Shoshone Peak
South Shoshone Peak
TOIYABE
NATIONAL
FOREST
Alkali Flat
39° 00'
TOIYABE NATIONAL FOREST
Gabbs
Paradise Peak
Richmond Hill
Toiyabe Dome
Mahogany Hill
BIG SMOKY VALLEY
Round Mountain
Jefferson
Stewart Valley
Little Pilot Peak
Table Mtn
BIG SMOKY NORTH

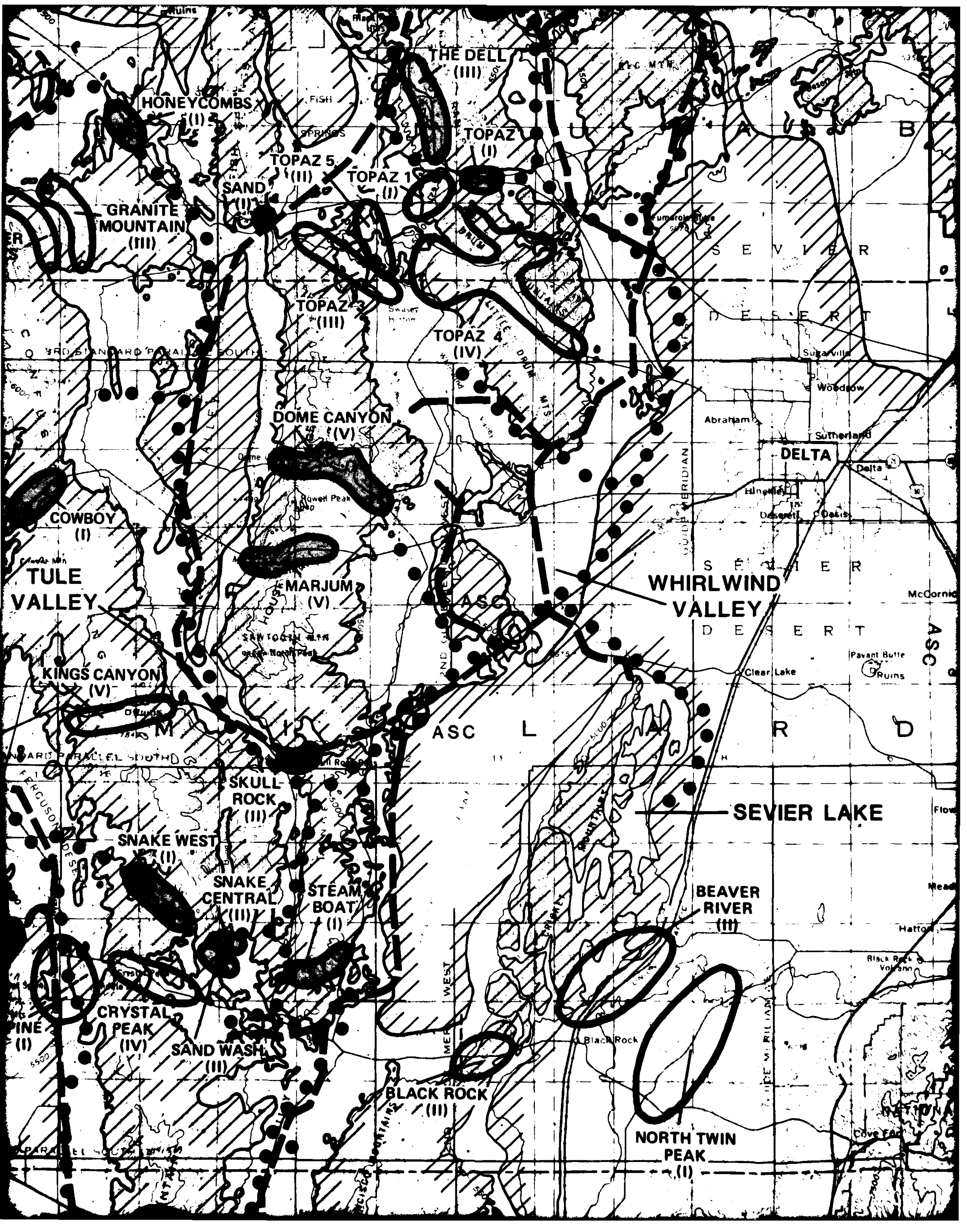


AUSTIN
EUREKA
ANTELOPE VALLEY
MONITOR VALLEY
MINERS (III)
COCKALORUM WASH (I)
COTTONWOOD CREEK (III)
LITTLE SMOKY VALLEY
RED ROCK SUMMIT (II)
BROWN SUMMIT (II)
BIG SAND SPRINGS VALLEY
HOT CREEK VALLEY
STONE CABIN VALLEY
BLACK ROCK SUMMIT (II)
MONITOR SOUTH (II)
HOT CREEK CANYON

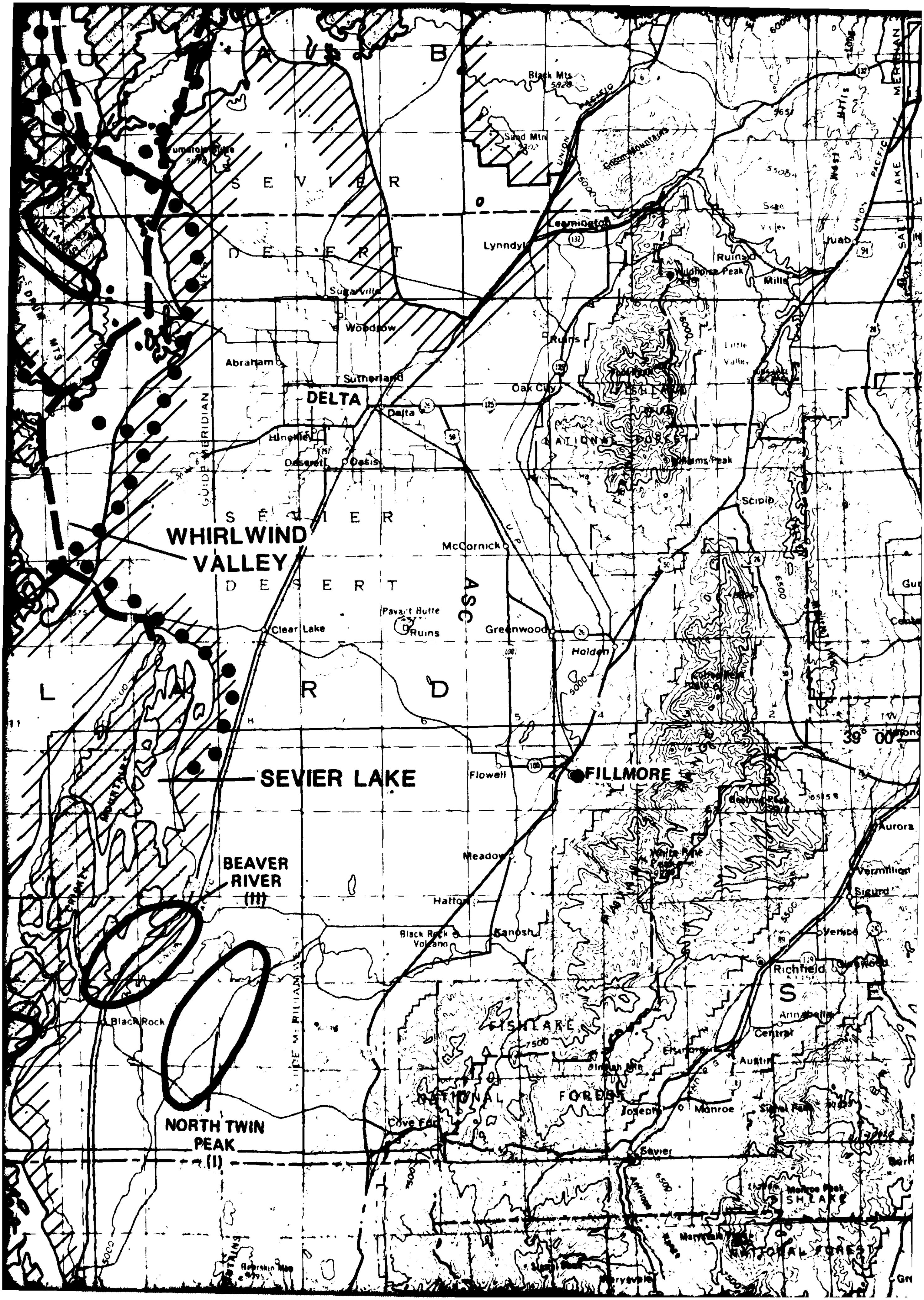

LONG VALLEY
BUTTE VALLEY
BECK (I)
ROBBERS ROOST (II)
DRY MOUNTAIN (II)
SAMMY SPRINGS (I)
MARKING CORRAL SUMMIT (II)
ROBINSON SUMMIT (IV)
JAKES VALLEY
PANCAKE SUMMIT (II)
LITTLE ANTELOPE SUMMIT (III)
RIEPETOWN (IV)
ELY
East Ely
NEWARK VALLEY
RAILROAD NORTH (I)
MURRY SUMMIT (V)
RED ROCK SUMMIT (II)
DUCKWATER HILLS (I)
JAKES WASH (I)
RAILROAD VALLEY
CONNOR (V)
STEPTOE VALLEY
CURRANT SUMMIT (IV)
BULLWHACK SUMMIT (I)
DUCKWATER CREEK (I)
WELLS STATION SUMMIT (II)
LAKE VALLEY SUMMIT (I)
CAVE VALLEY
PATTERSON (IV)
SHINGLE (III)
WHITE RIVER VALLEY
MULESHOE SUMMIT
RAILROAD VALLEY
STANDARD PARALLEL
Steptoe
McGill
Warm Springs



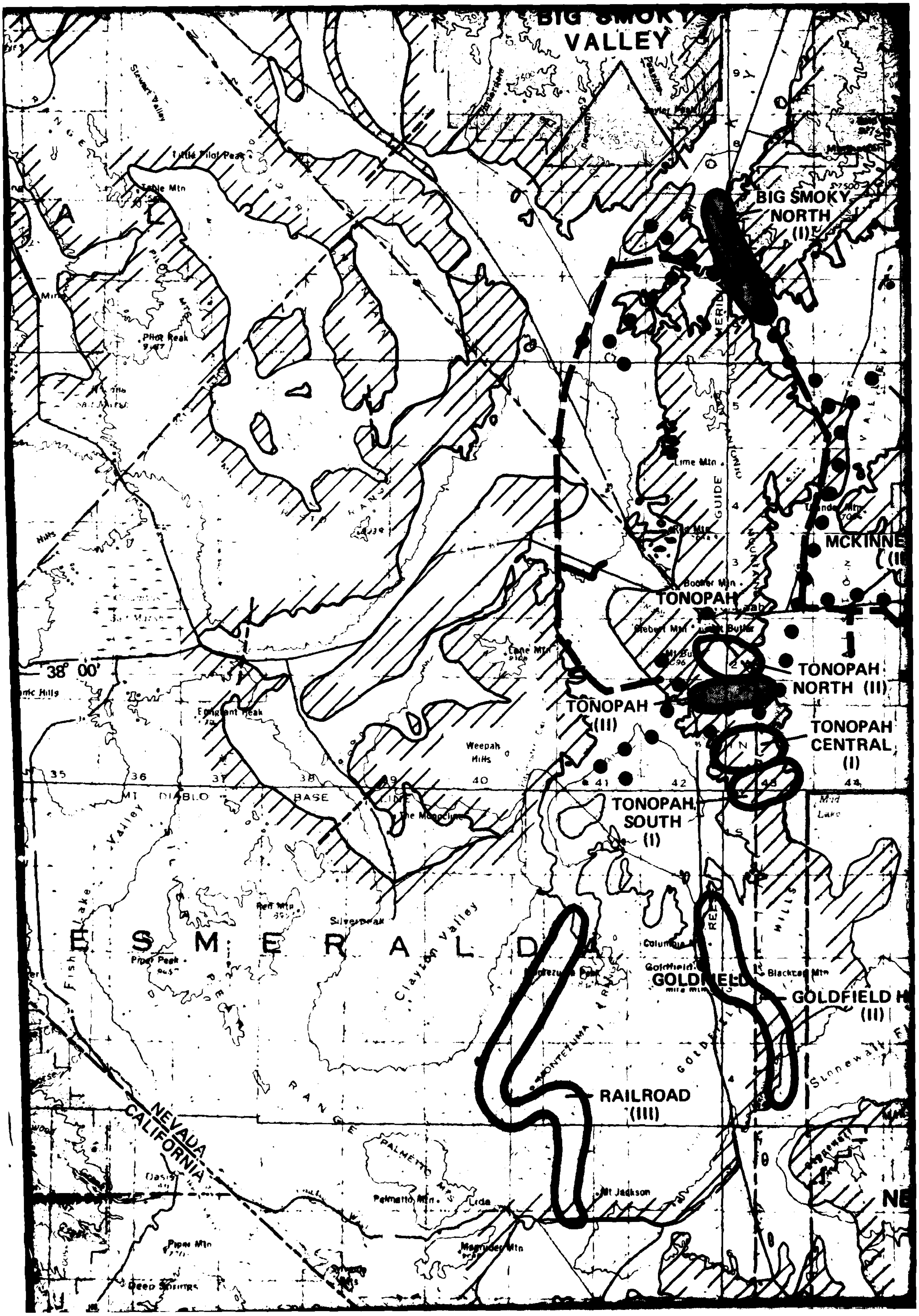
GANDY (II)
GANDY (III)
HONEYCOMB (I)
GRANITE MOUNTAIN (III)
SMELTER KNOLLS (IV)
SNAKE VALLEY
COWBOY (I)
TULE VALLEY
SACRAMENTO (IV)
KINGS CANYON (V)
CONNORS (V)
STEPTOE VALLEY
SPRING VALLEY
PRUESS LAKE (II)
SNAKE WEST (I)
COWBOY PINE WEST (II)
HAMLIN VALLEY
BULLWHACK SUMMIT (I)
CRYSTAL PEAK (IV)
PINE (I)
MORMON GAP (I)
THE TROUGHS (I)
SAND WA (III)
HALFWAY SUMMIT (IV)
HORSE CORRAL (I)
PINE VALLEY
HUMBOLDT NATIONAL FOREST
3RD STANDARD PARALLEL SOUTH
4TH STANDARD PARALLEL SOUTH
2ND STANDARD PARALLEL

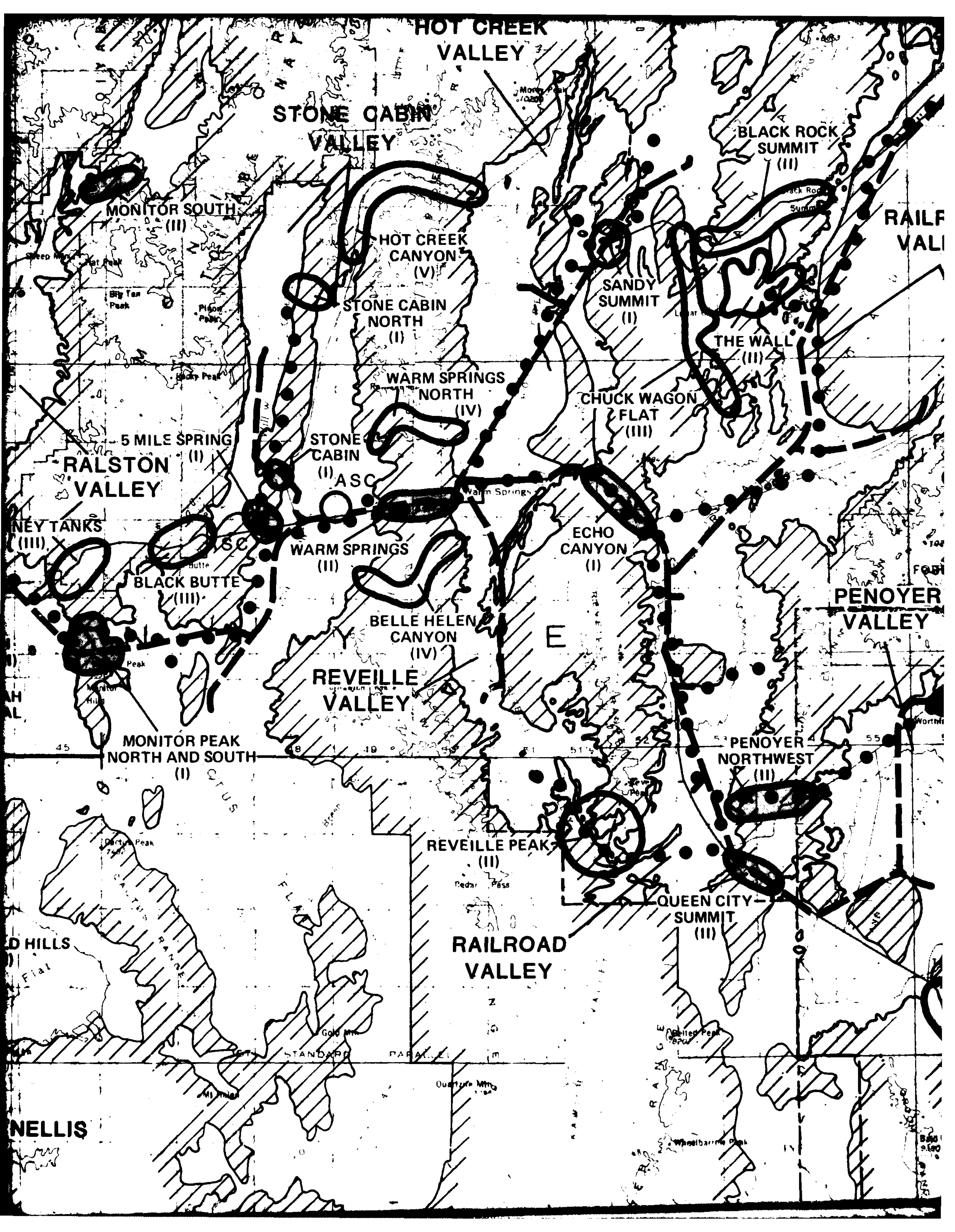


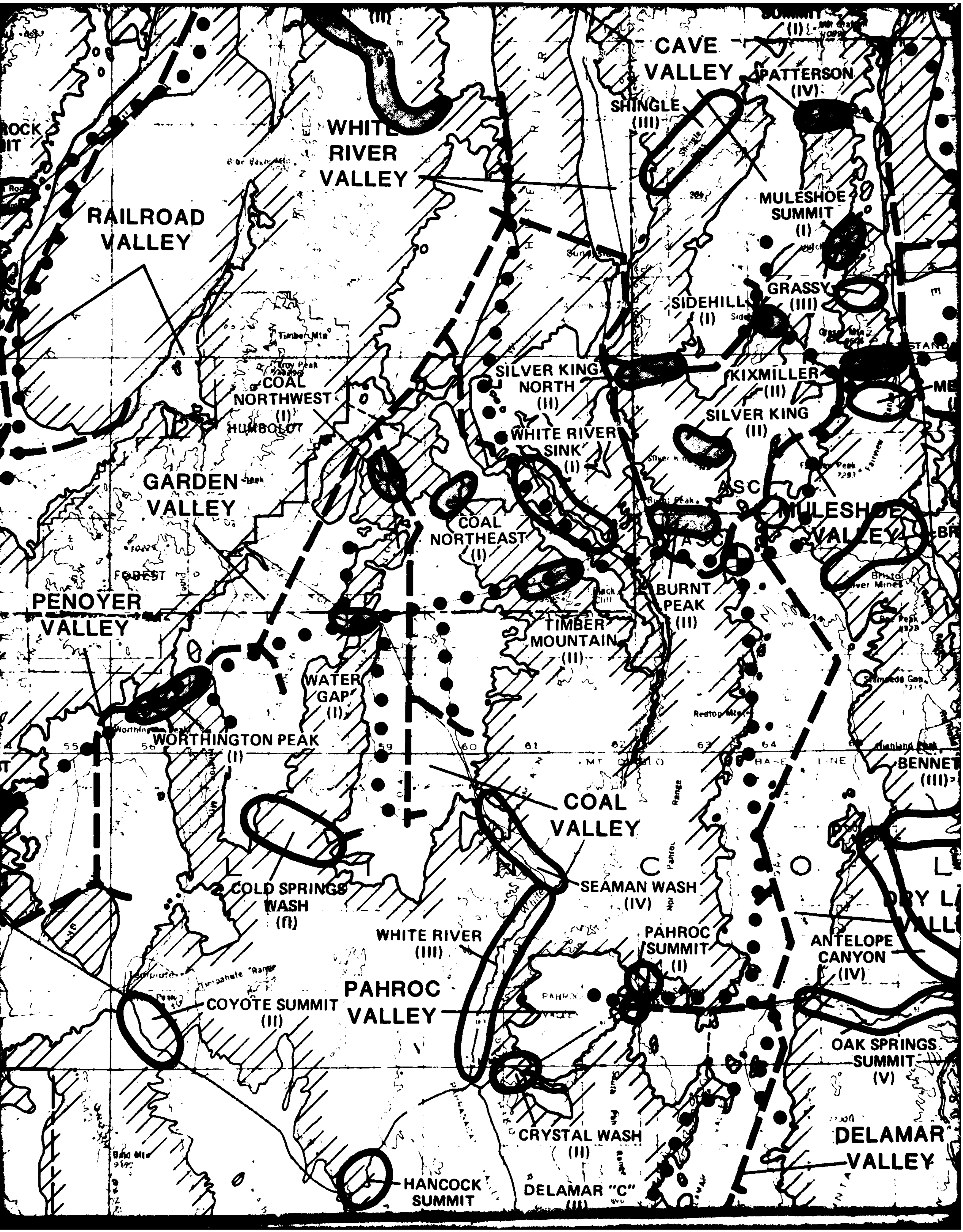
THE DELL
(III)
HONEYCOMBS
(I)
TOPAZ
(I)
TOPAZ 5
(III)
TOPAZ 1
(I)
SAND
(I)
GRANITE
MOUNTAIN
(III)
SEVIER
DESERT
TOPAZ 3
(III)
TOPAZ 4
(IV)
Sugarville
Woodrow
Abraham
Sutherland
DELTA
Delta
Hinckley
Deseret
Oasis
DOME CANYON
(V)
COWBOY
(I)
TULE
VALLEY
MARJUM
(V)
WHIRLWIND
VALLEY
SEVIER
DESERT
McCornick
Pavant Butte
Ruins
Clear Lake
KINGS CANYON
(V)
ASC
LAKE
ASC
SKULL
ROCK
(III)
SEVIER LAKE
SNAKE WEST
(I)
SNAKE
CENTRAL
(II)
STEAM
BOAT
(I)
BEAVER
RIVER
(III)
Hatton
Black Rock
Volcano
PINE
(I)
CRYSTAL
PEAK
(IV)
SAND WASH
(II)
Black Rock
BLACK ROCK
(II)
NORTH TWIN
PEAK
(I)
Cove Fort

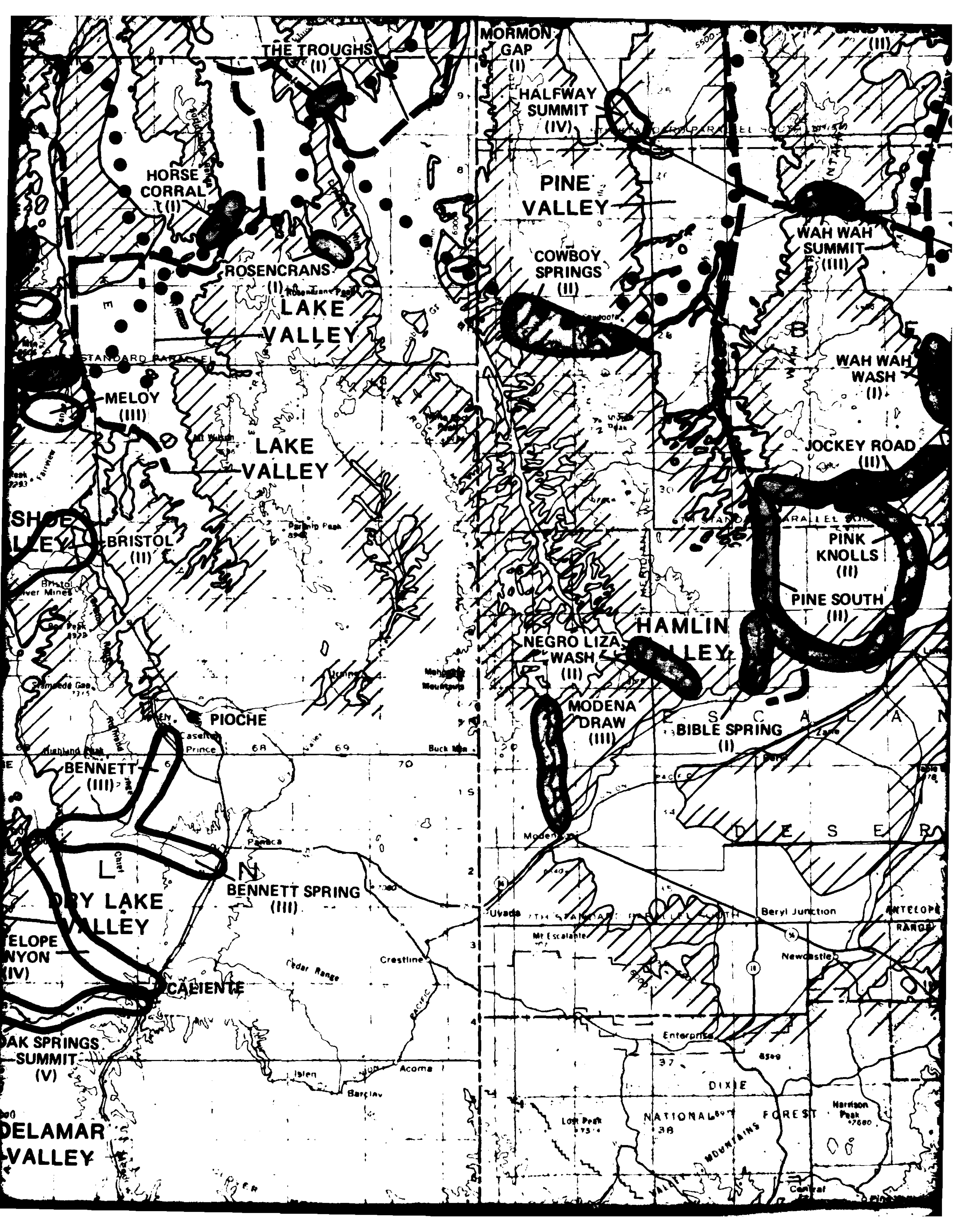


WHIRLWIND VALLEY
SEVIER LAKE
BEAVER RIVER
(III)
NORTH TWIN PEAK
(I)
SEVIER
DESERT
SEVIER
DESERT
L
A
R
D
DELTA
FILLMORE
Delta
Lynndyl
Leamington
Sugarville
Woodrow
Abraham
Sutherland
Oak City
Hinckley
Deseret
Oasis
McCornick
Clear Lake
Pavant Butte
Ruins
Greenwood
Holden
Flowell
Meadow
Hatton
Kanosh
Black Rock Volcano
Black Rock
Cove Fort
Scipio
Juab
Mills
Ruins
Little Valley
Aurora
Vermillion
Sigurd
Venice
Richfield
Annabella
Central
Elsinore
Austin
Monroe
Joseph
Sevier
Marysvale
FISHLAKE
NATIONAL
FOREST
UNION PACIFIC
GUIDE MERIDIAN
Black Mts
Sand Mtn
Wildhorse Peak
White Pine Peak
Monroe Peak
39° 00'


BIG SMOKY VALLEY
BIG SMOKY NORTH (I)
MCKINNE
TONOPAH
TONOPAH NORTH (II)
TONOPAH (III)
TONOPAH CENTRAL (I)
TONOPAH SOUTH (I)
38° 00'
MT DIABLO BASE LINE
E S M E R A L D
GOLDFIELD
GOLDFIELD H (III)
RAILROAD (III)
NEVADA
CALIFORNIA

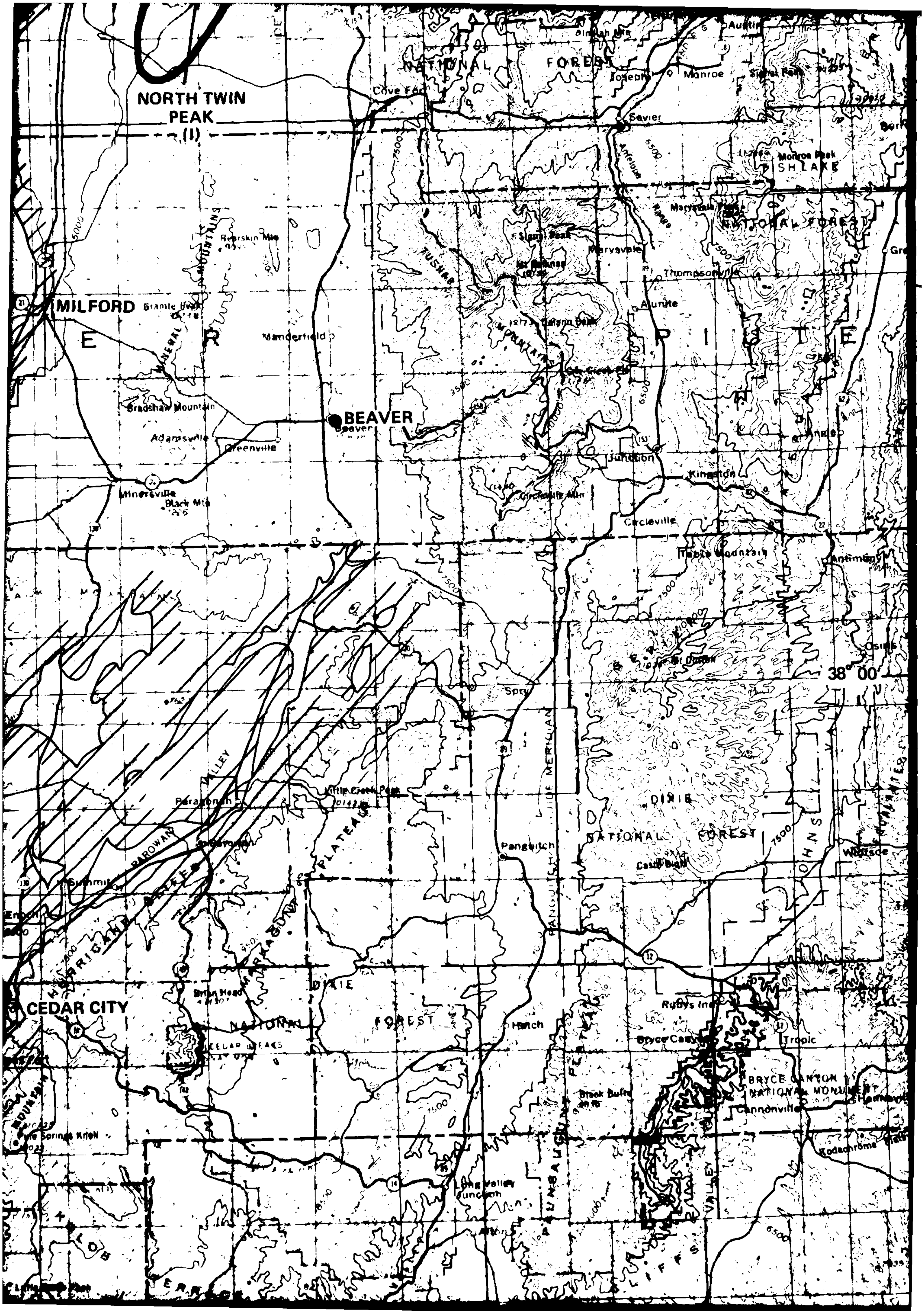

HOT CREEK VALLEY
STONE CABIN VALLEY
MONITOR SOUTH (II)
HOT CREEK CANYON (V)
STONE CABIN NORTH (I)
SANDY SUMMIT (I)
BLACK ROCK SUMMIT (II)
RAILROAD VALLEY
THE WALL (II)
WARM SPRINGS NORTH (IV)
CHUCK WAGON FLAT (III)
5 MILE SPRING (I)
STONE CABIN (I)
RALSTON VALLEY
ASC
NEY TANKS (III)
BLACK BUTTE (III)
WARM SPRINGS (II)
ECHO CANYON (I)
PENOYER VALLEY
BELLE HELEN CANYON (IV)
REVEILLE VALLEY
MONITOR PEAK NORTH AND SOUTH (I)
PENOYER NORTHWEST (II)
REVEILLE PEAK (II)
QUEEN CITY SUMMIT (II)
RAILROAD VALLEY
NELLIS


CAVE VALLEY
PATTERSON (IV)
SHINGLE (III)
WHITE RIVER VALLEY
RAILROAD VALLEY
MULESHOE SUMMIT (I)
GRASSY (III)
SIDEHILL (I)
SILVER KING NORTH (II)
KIXMILLER (II)
COAL NORTHWEST (I)
HUMBOLDT
SILVER KING (II)
WHITE RIVER SINK (I)
GARDEN VALLEY
MULESHOE VALLEY
COAL NORTHEAST (I)
BURNT PEAK (II)
FOREST
PENOYER VALLEY
TIMBER MOUNTAIN (II)
WATER GAP (I)
WORTHINGTON PEAK (I)
BENNET (III)
COAL VALLEY
SEAMAN WASH (IV)
COLD SPRINGS WASH (II)
WHITE RIVER (III)
PAHROC SUMMIT (I)
ANTELOPE CANYON (IV)
DRY LAKE VALLEY
COYOTE SUMMIT (II)
PAHROC VALLEY
OAK SPRINGS SUMMIT (V)
CRYSTAL WASH (II)
DELAMAR VALLEY
HANCOCK SUMMIT
DELAMAR "C" (III)

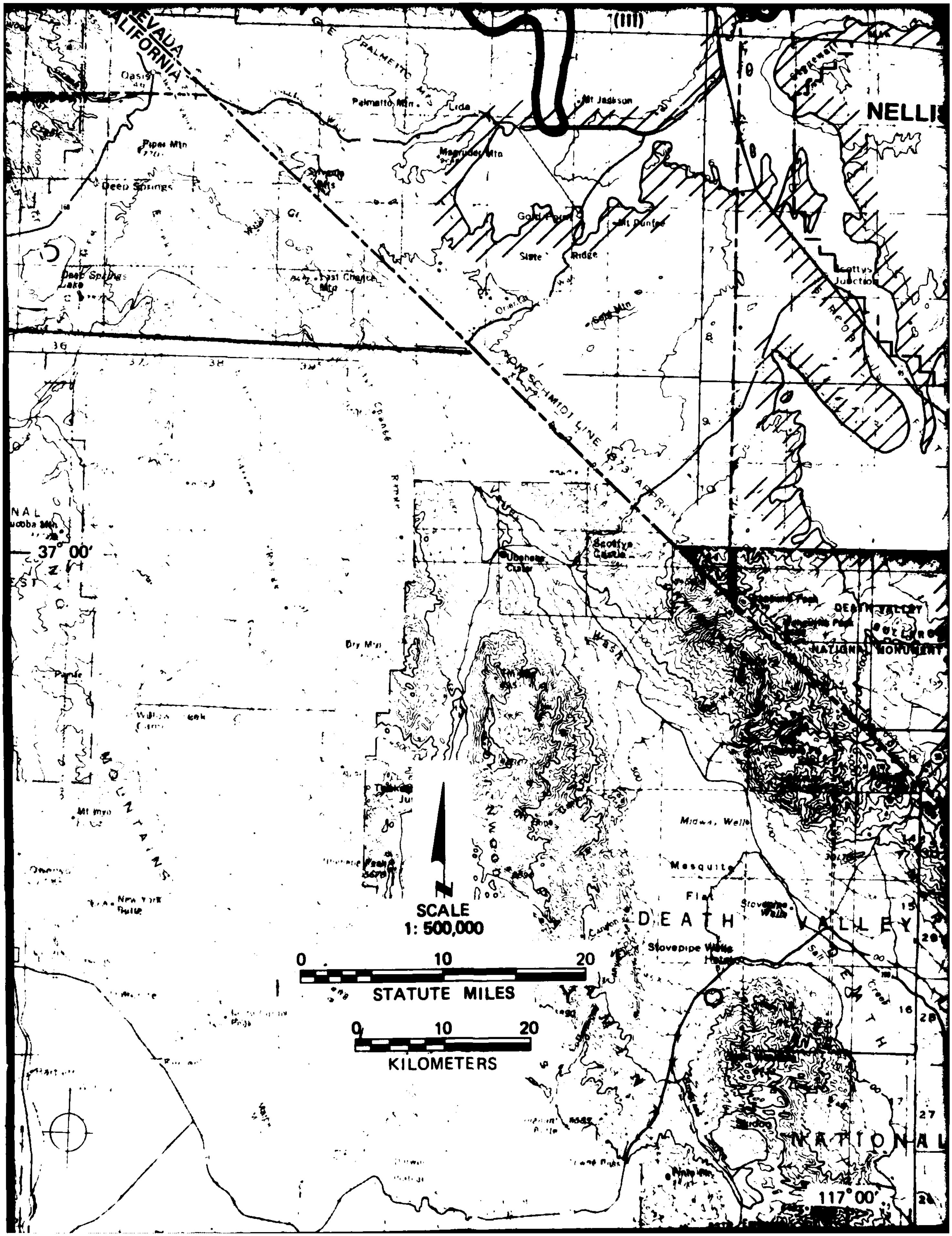


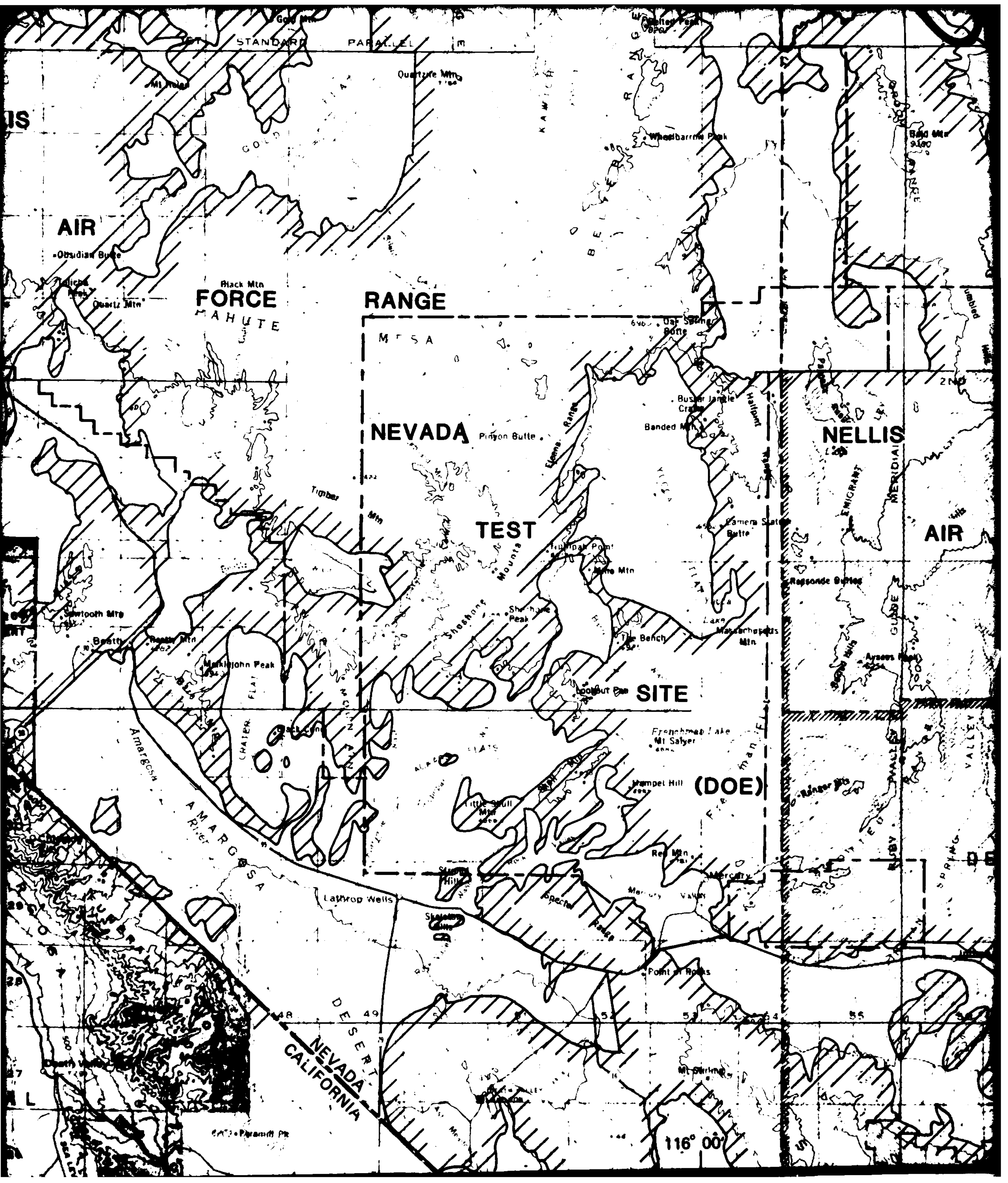
THE TROUGHS (I)
MORMON GAP (I)
HALFWAY SUMMIT (IV)
HORSE CORRAL (I)
ROSENCRANS (I)
LAKE VALLEY
PINE VALLEY
COWBOY SPRINGS (II)
WAH WAH SUMMIT (III)
WAH WAH WASH (I)
MELOY (III)
LAKE VALLEY
JOCKEY ROAD (II)
BRISTOL (II)
PINK KNOLLS (II)
PINE SOUTH (II)
HAMLIN VALLEY
NEGRO LIZA WASH (II)
MODENA DRAW (III)
BIBLE SPRING (I)
PIOCHE
BENNETT (III)
BENNETT SPRING (III)
DRY LAKE VALLEY
ANTELOPE CANYON (IV)
CALIENTE
OAK SPRINGS SUMMIT (V)
DELAMAR VALLEY
ESCALANTE DESERT
Uvada
Beryl Junction
Newcastle
Crestline
Enterprise
DIXIE NATIONAL FOREST
Panaca
Modena
Caselton
Prince
Acoma
Barclay
Islen
Cedar Range
Standard Parallel

BLACK ROCK (II)
NORTH TWIN PEAK (I)
FRISCO SUMMIT (II)
WAH WAH VALLEY
MILFORD
WAH WAH WASH (I)
GROVER WASH (II)
BEAVER
KEY ROAD (II)
CEDAR CITY
Cedar City
Minersville
Adamsville
Greenville
Manderfield
Bradshaw Mountain
Lund
Avon
Paragonah
Parowan
Summit
Enoch
Iron Springs
Desert Mound
Granite Mtn
ANTELOPE RANGE
HARMONY MOUNTAINS
New Harmony
Panguitch
Hatch
Long Valley Junction
Little Creek Peak
Brian Head
CEDAR BREAKS NAT MON
NATIONAL
FOREST
Pine Springs Knoll
Black Butte
Cove Fort
Circleville
Junction
Marysvale
Sevier
Table Butte
Latimer
Granite Peak
Bearskin Mtn
Black Mtn
PARAGONAH
PANGUITCH GUIDE MERIDIAN
UNION PACIFIC
PAROWAN VALLEY
HURRICANE CLIFFS
MARKAGUNT PLATEAU

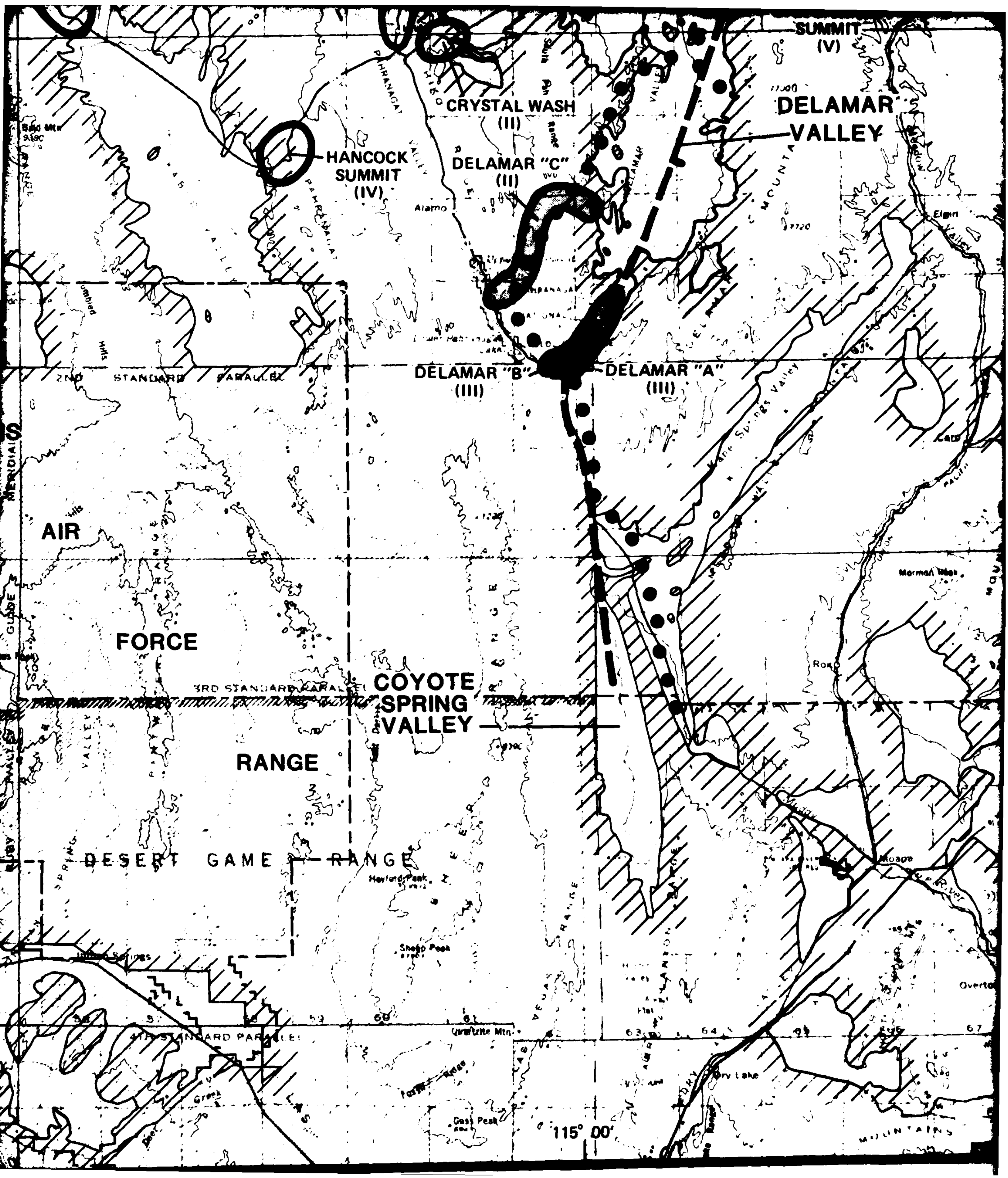


NORTH TWIN PEAK (I)
MILFORD
BEAVER
CEDAR CITY
NATIONAL FOREST
Cove Fort
Joseph
Monroe
Sevier
Monroe Peak
Marysvale
Thompsonville
Alunite
Junction
Kingston
Circleville
Table Mountain
Antimony
Osiris
38° 00'
Manderfield
Bradshaw Mountain
Adamsville
Greenville
Minersville
Black Mtn
Circleville Mtn
Spry
Little Creek Peak
Paragonah
Parowan
Summit
Enoch
Panguitch
DIXIE
NATIONAL FOREST
Castle Bluff
Brian Head
DIXIE
FOREST
Hatch
Rubys Inn
Tropic
Bryce Canyon
BRYCE CANYON NATIONAL MONUMENT
Cannonville
Black Butte
Long Valley Junction

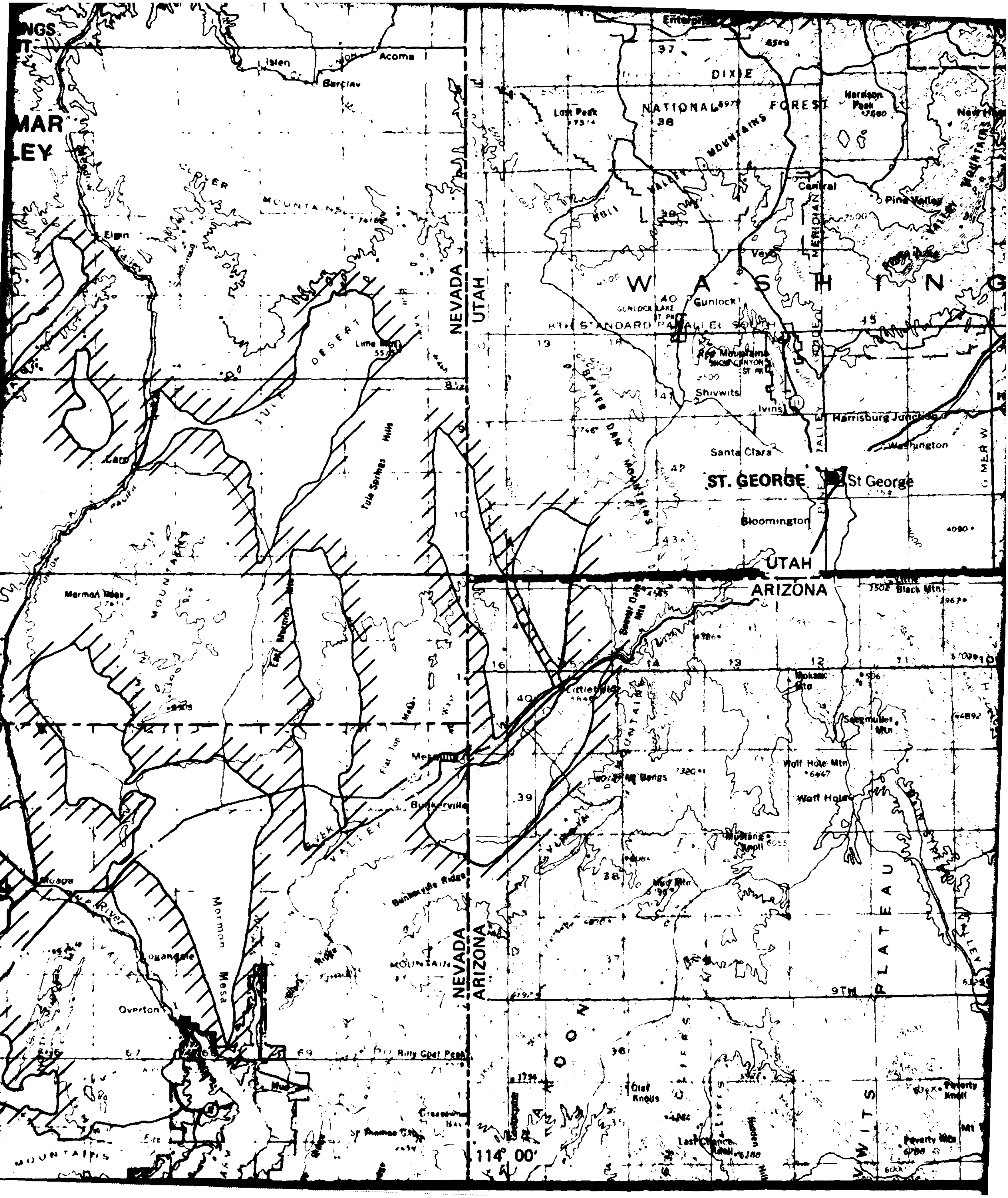

NEVADA
CALIFORNIA
Oasis
Palmetto Mtn
Lida
Mt Jackson
Piper Mtn
Deep Springs
Magruder Mtn
Gold Point
Slate Ridge
Deep Springs Lake
Last Chance Mtn
Gold Mtn
Scottys Junction
NELLIS
VON SCHMIDT LINE (1873) APPROX
37° 00'
Ubehebe Crater
Scottys Castle
DEATH VALLEY
NATIONAL MONUMENT
Dry Mtn
MOUNTAINS
Mt Inyo
New York Butte
Midway Well
Mesquite
Flat
Stovepipe Wells
Stovepipe Wells Hotel
DEATH VALLEY
SCALE
1: 500,000
0 10 20
STATUTE MILES
0 10 20
KILOMETERS
NATIONAL
117° 00'



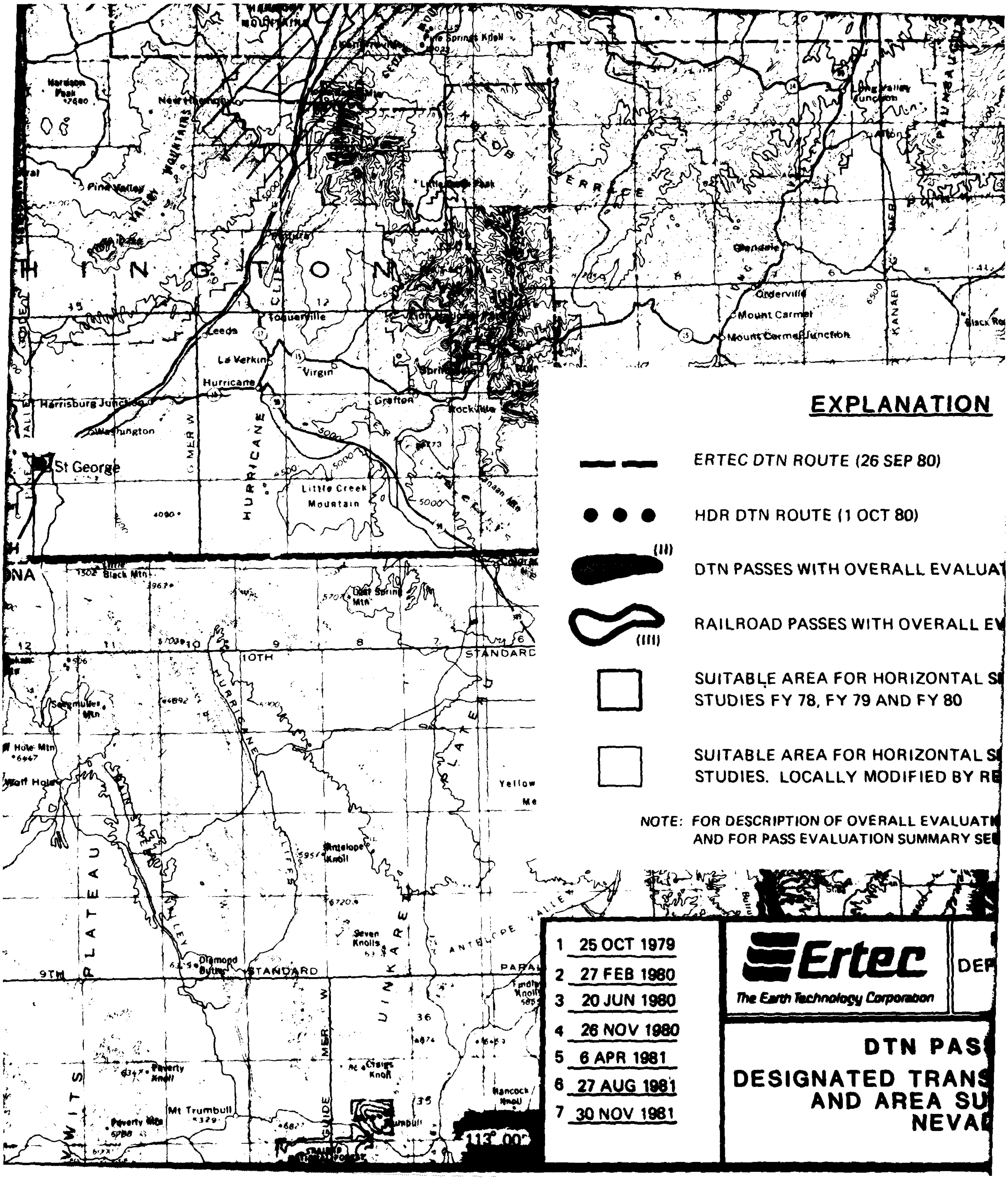
AIR
FORCE
RANGE
NEVADA
TEST
SITE
(DOE)
NELLIS
AIR
STANDARD PARALLEL
Quartzite Mtn
Wheelbarrow Peak
Obsidian Butte
Black Mtn
Quartz Mtn
PAHUTE
MESA
Pinyon Butte
Timber Mtn
Shoshone Peak
Shoshone Mountain
Buster Jangle Crater
Banded Mtn
Camera Station Butte
Yucca Lake
The Bench
Lookout Pass
Frenchman Lake
Mt Salyer
Yucca Flat
Frenchman Flat
Sawtooth Mtn
Beatty
Bare Mtn
Meiklejohn Peak
Black Cone
CRATER FLAT
Amargosa
AMARGOSA River
AMARGOSA DESERT
Little Skull Mtn
Skull Mtn
Rampel Hill
Red Mtn
Mercury
Mercury Valley
Specter Range
Lathrop Wells
Point of Rocks
NEVADA
CALIFORNIA
Mt Stirling
Pyramid Pk
Death Valley
Rainbow Butte
Ranger Mts
EMIGRANT
MERIDIAN
GUIDE
Bald Mtn
116° 00'
48
49
53
54
55

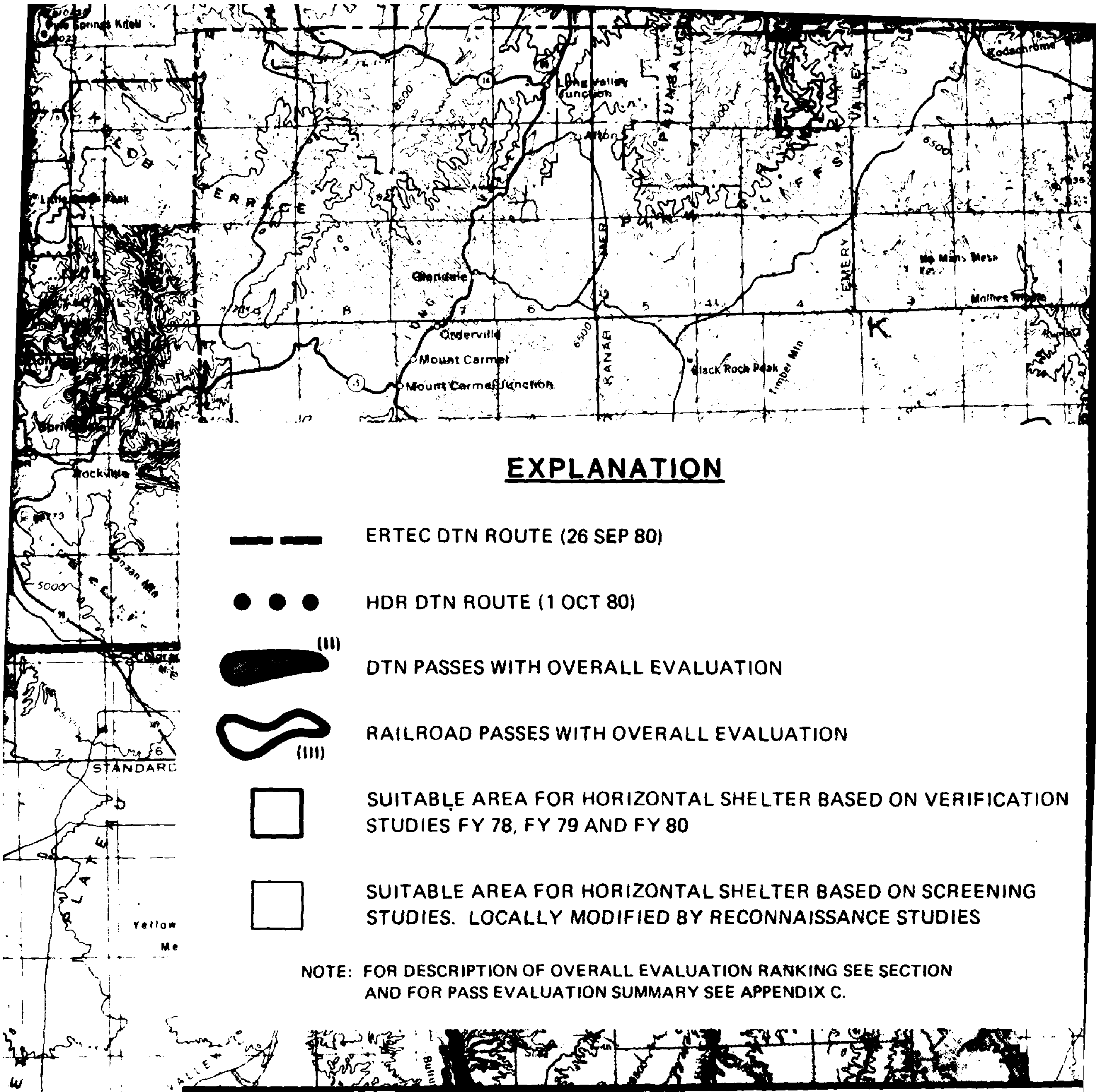


SUMMIT
(V)
CRYSTAL WASH
(II)
DELAMAR
VALLEY
HANCOCK
SUMMIT
(IV)
DELAMAR "C"
(II)
Alamo
DELAMAR "B"
(III)
DELAMAR "A"
(III)
2ND STANDARD PARALLEL
AIR
FORCE
RANGE
COYOTE
SPRING
VALLEY
3RD STANDARD PARALLEL
DESERT GAME RANGE
Hayford Peak
Sheep Peak
4TH STANDARD PARALLEL
Quartzite Mtn.
Gass Peak
115° 00'
Dry Lake
Moapa
Mormon Mesa
Overton
Elgin
Caliente
Kane Springs Valley
MOUNTAINS



Enterprise
Acoma
Barclay
DIXIE
NATIONAL
FOREST
Harrison Peak
MOUNTAINS
CLOVER
MOUNTAINS
Elgin
Central
Pine Valley
Veyo
W A S H I N G
NEVADA
UTAH
Gunlock
GUNLOCK LAKE
8TH STANDARD PARALLEL SOUTH
Lime Mtn
DESERT
JULE
Red Mountains
SNOW CANYON ST PK
Shivwits
Ivins
Harrisburg Junction
Washington
BEAVER DAM
MOUNTAINS
Santa Clara
ST. GEORGE
St George
Tule Springs Hills
Caliente
PACIFIC
Bloomington
UTAH
ARIZONA
Mormon Mesa
MOUNTAINS
East Mormon Mtn
Littlefield
Mesquite
Bunkerville
VALLEY
Wolf Hole Mtn
Wolf Hole
Mustang Knoll
Mud Mtn
Seegmuller Mtn
Bunkerville Ridge
Moapa
River
VALLEY
Logandale
Mormon
Mesa
MOUNTAIN
NEVADA
ARIZONA
PLATEAU
VALLEY
Overton
Billy Goat Peak
Olaf Knolls
Poverty Knoll
Last Chance Knoll
Poverty Mtn
St Thomas Gap
MOUNTAINS
114° 00'


EXPLANATION
ERTEC DTN ROUTE (26 SEP 80)
HDR DTN ROUTE (1 OCT 80)
(II)
DTN PASSES WITH OVERALL EVALUAT
RAILROAD PASSES WITH OVERALL EV
(III)
SUITABLE AREA FOR HORIZONTAL S
STUDIES FY 78, FY 79 AND FY 80
SUITABLE AREA FOR HORIZONTAL S
STUDIES. LOCALLY MODIFIED BY RE
NOTE: FOR DESCRIPTION OF OVERALL EVALUATI
AND FOR PASS EVALUATION SUMMARY SE
1 25 OCT 1979
2 27 FEB 1980
3 20 JUN 1980
4 26 NOV 1980
5 6 APR 1981
6 27 AUG 1981
7 30 NOV 1981
Ertec
The Earth Technology Corporation
DEP
DTN PAS
DESIGNATED TRANS
AND AREA SU
NEVA
St George
Washington
Harrisburg Junction
Hurricane
La Verkin
Leeds
Toquerville
Virgin
Grafton
Rockville
Pine Valley
New Harmony
Little Creek
Mountain
Glendale
Orderville
Mount Carmel
Mount Carmel Junction
Long Valley Junction
Alton
Black Mtn
Seven Knolls
Diamond Butte
Mt Trumbull
Poverty Knoll
Hancock Knoll
Antelope Knoll
Wolf Hole
STANDARD
10TH
9TH
113° 00'



EXPLANATION

ERTEC DTN ROUTE (26 SEP 80)

HDR DTN ROUTE (1 OCT 80)

(II) DTN PASSES WITH OVERALL EVALUATION

(III) RAILROAD PASSES WITH OVERALL EVALUATION

SUITABLE AREA FOR HORIZONTAL SHELTER BASED ON VERIFICATION STUDIES FY 78, FY 79 AND FY 80

SUITABLE AREA FOR HORIZONTAL SHELTER BASED ON SCREENING STUDIES. LOCALLY MODIFIED BY RECONNAISSANCE STUDIES

NOTE: FOR DESCRIPTION OF OVERALL EVALUATION RANKING SEE SECTION AND FOR PASS EVALUATION SUMMARY SEE APPENDIX C.

1 25 OCT 1979
2 27 FEB 1980
3 20 JUN 1980
4 26 NOV 1980
5 6 APR 1981
6 27 AUG 1981
7 30 NOV 1981

Ertec
The Earth Technology Corporation

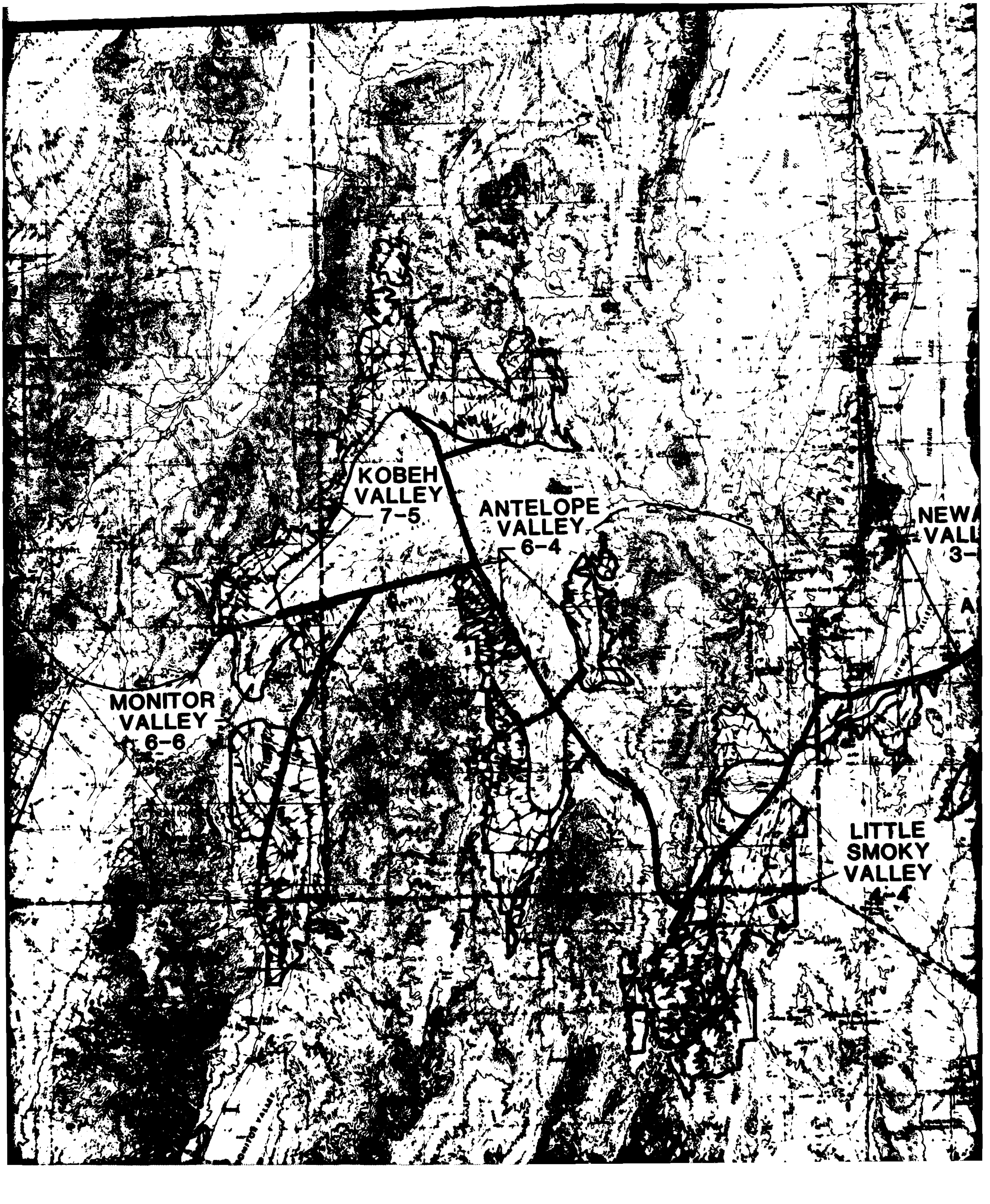
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

DTN PASS LOCATION
DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

VOLUME II PART I

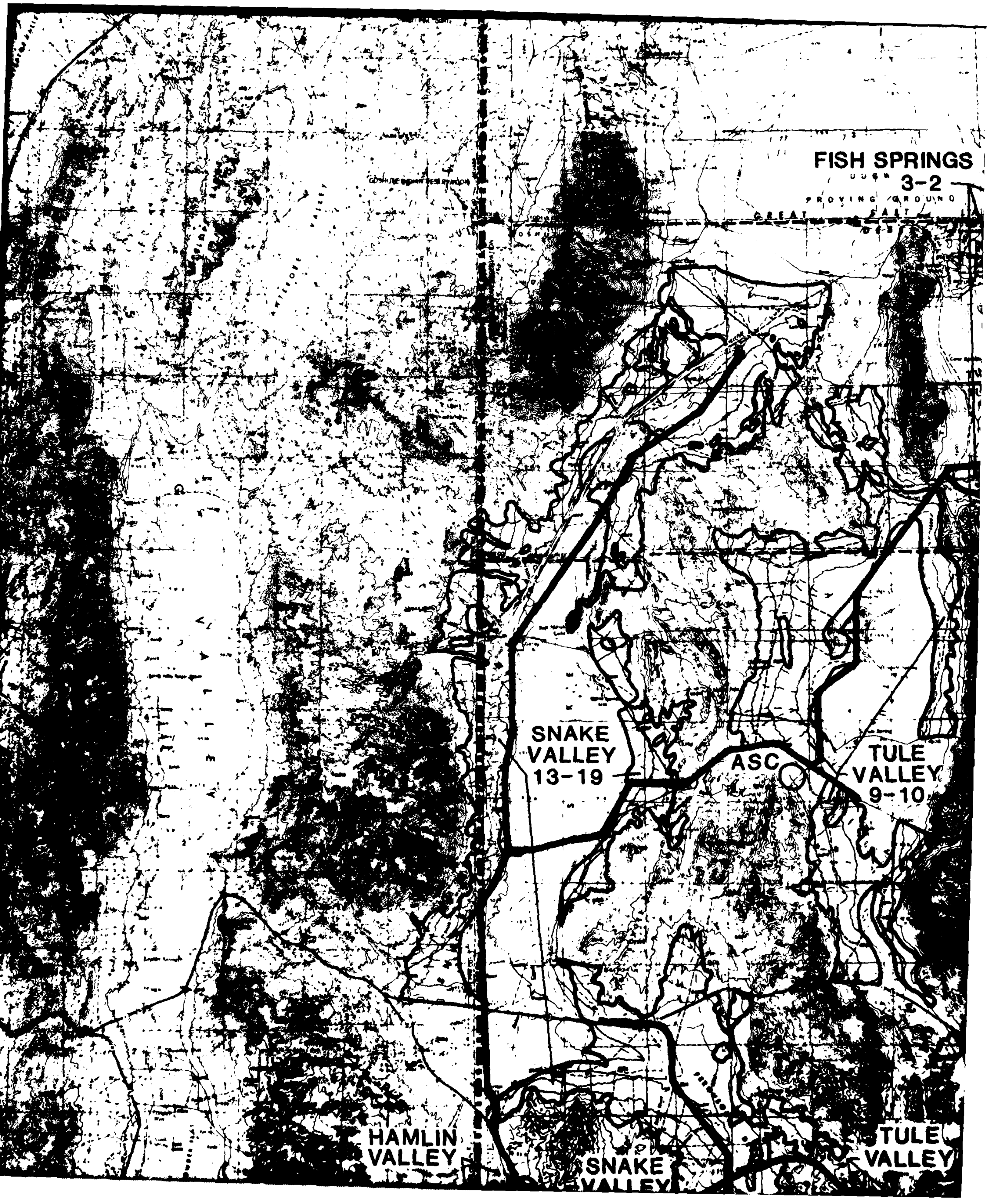
DRAWING 5-2

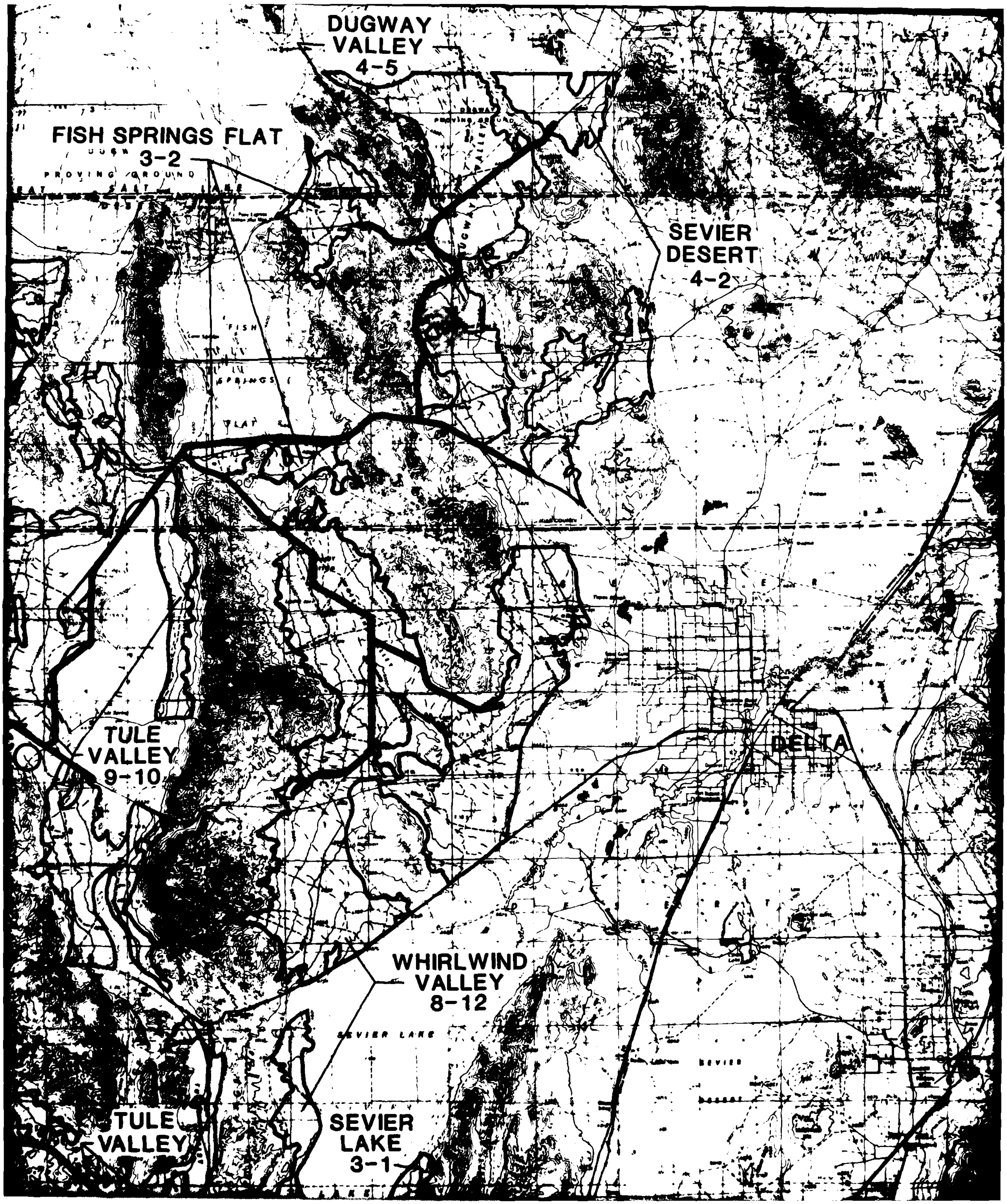

AUSTIN

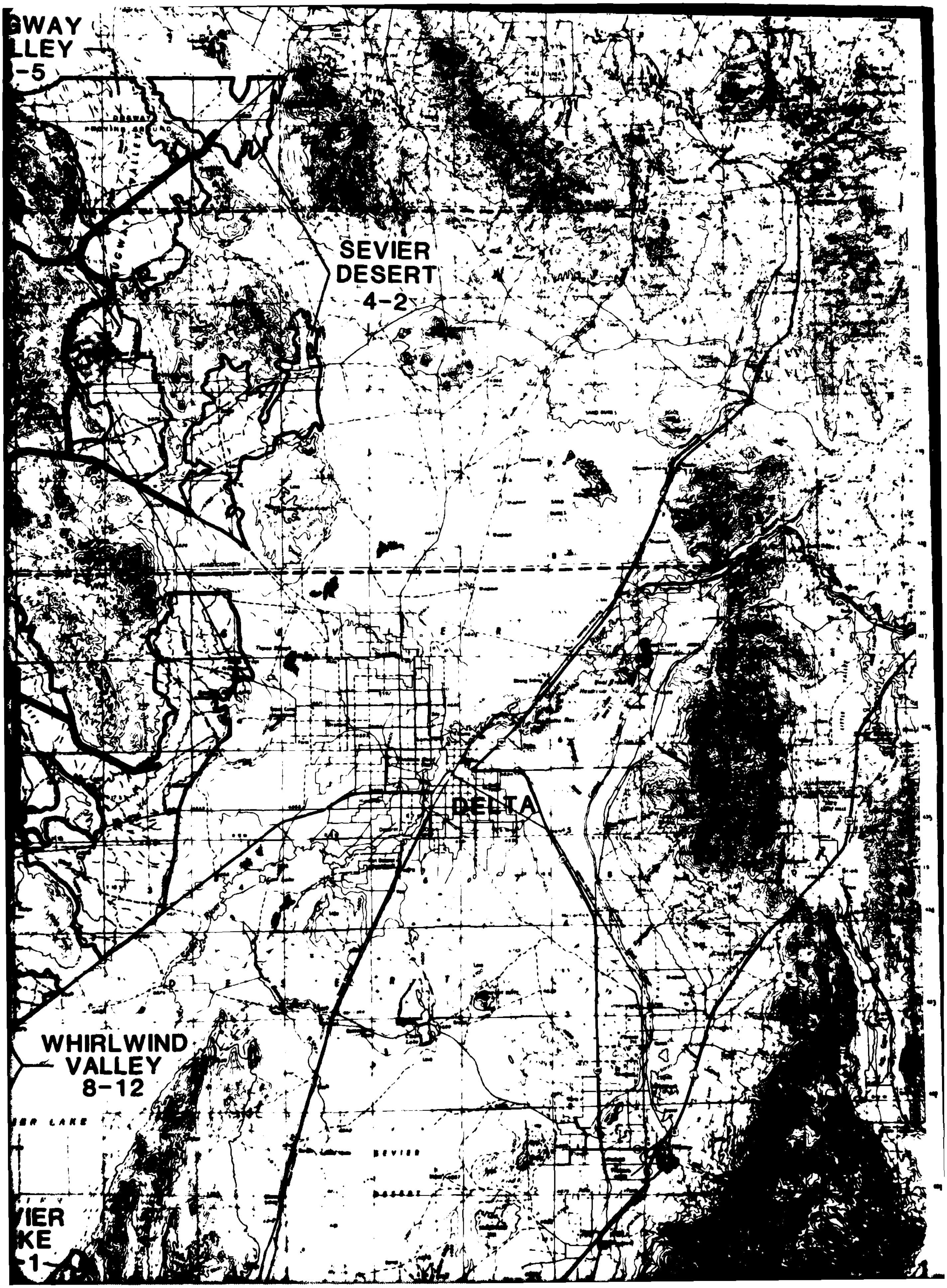


KOBEH VALLEY 7-5
ANTELOPE VALLEY 6-4
MONITOR VALLEY 6-6
LITTLE SMOKY VALLEY 4-4
NEWA
VALL
3-

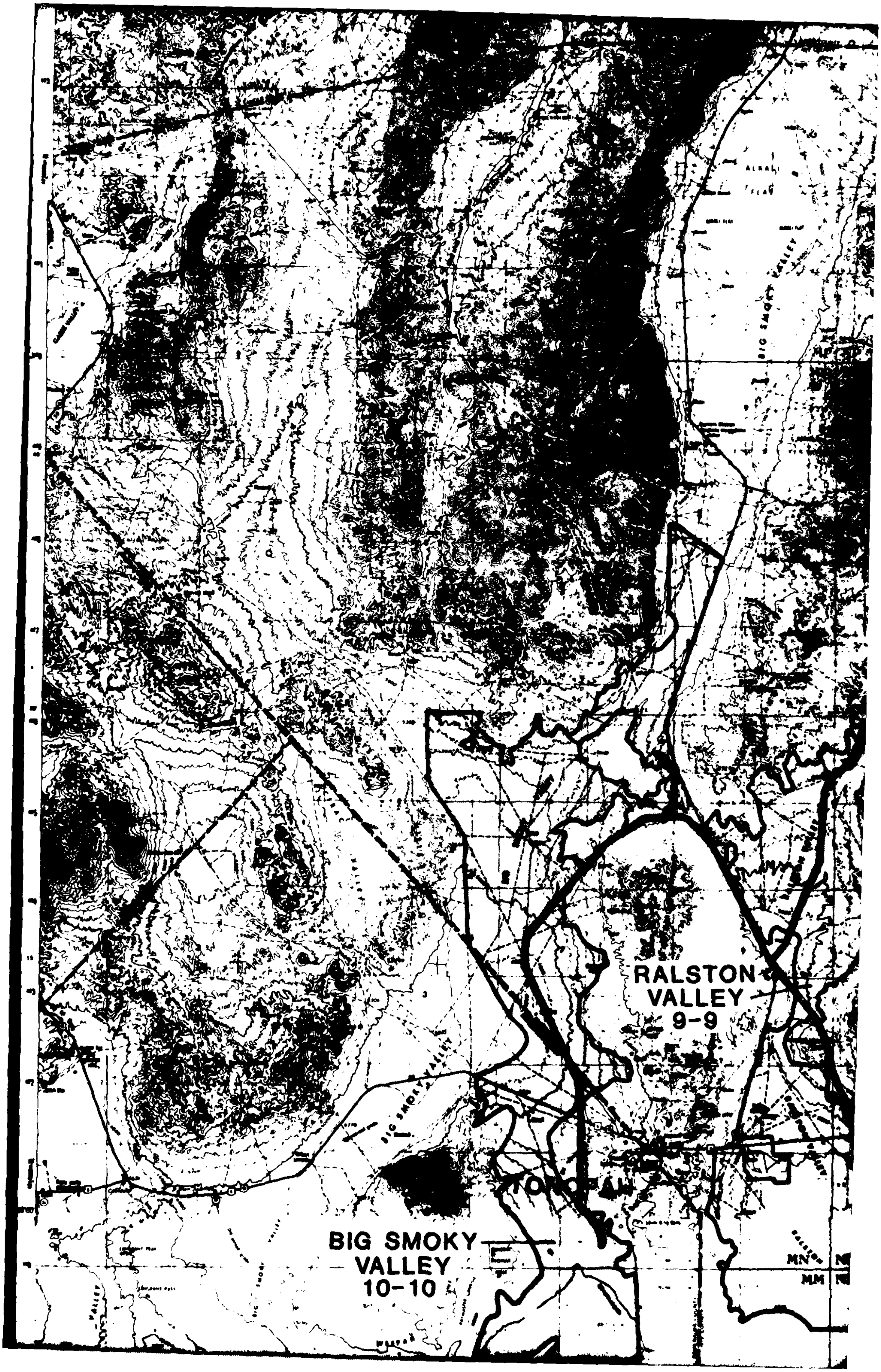

BUTTE VALLEY 5-9
LONG VALLEY 3-4
NEWARK VALLEY 3-5
ASC
JAKES VALLEY 4-3
LITTLE SMOKY VALLEY 4-4
ELY
STEPTOE VALLEY


FISH SPRINGS
3-2
PROVING GROUND
GREAT SALT
SNAKE
VALLEY
13-19
ASC
TULE
VALLEY
9-10
HAMLIN
VALLEY
SNAKE
VALLEY
TULE
VALLEY


DUGWAY VALLEY 4-5
FISH SPRINGS FLAT 3-2
SEVIER DESERT 4-2
TULE VALLEY 9-10
DELTA
WHIRLWIND VALLEY 8-12
TULE VALLEY
SEVIER LAKE 3-1



GWAY
LLEY
-5
SEVIER
DESERT
4-2
DELTA
WHIRLWIND
VALLEY
8-12
VIER
KE
-1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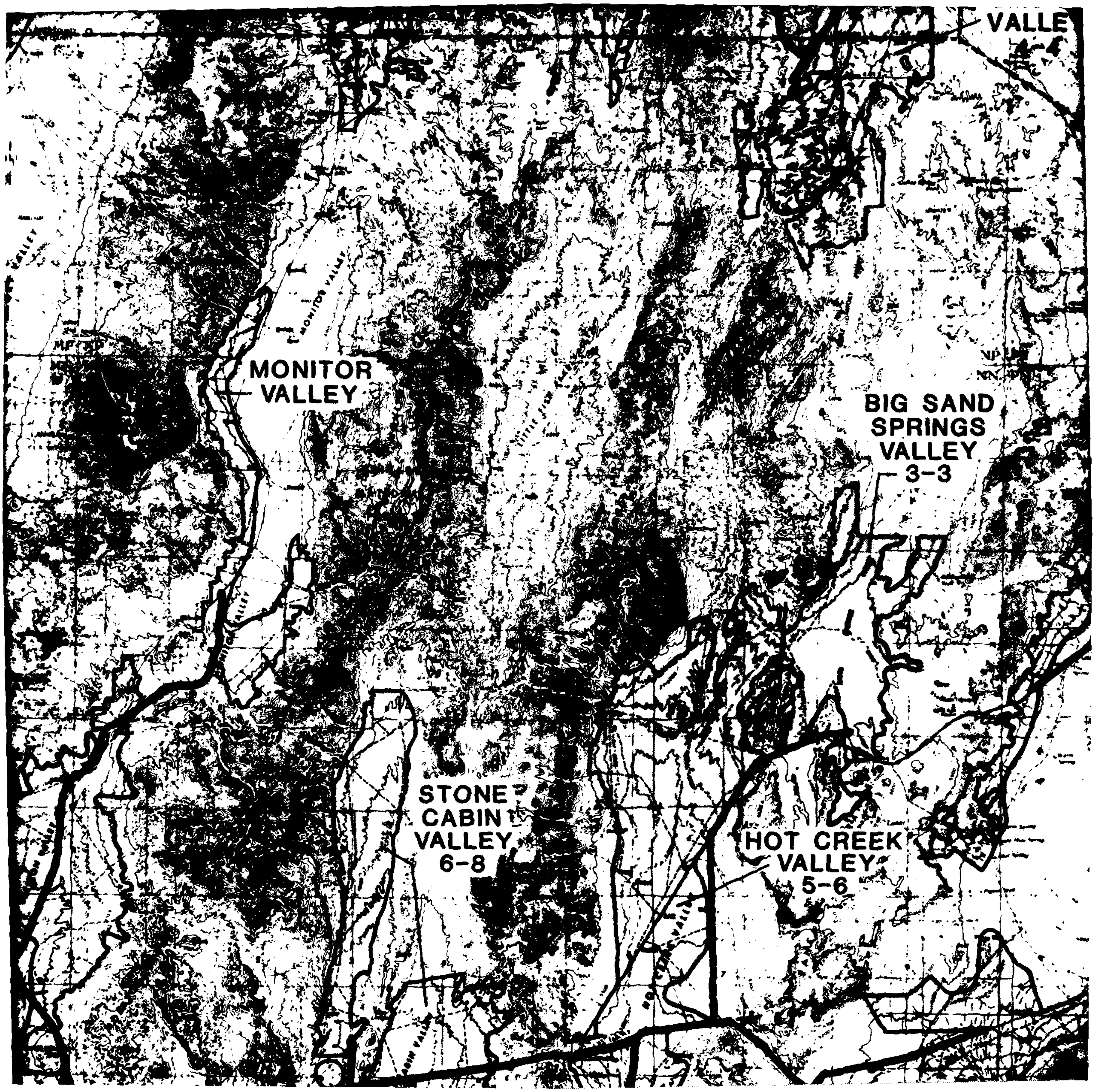
VALLEY
9-9
BIG SMOKY
VALLEY
10-10
BIG SMOKY VALLEY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MONITOR
VALLEY
BIG SAND
SPRINGS
VALLEY
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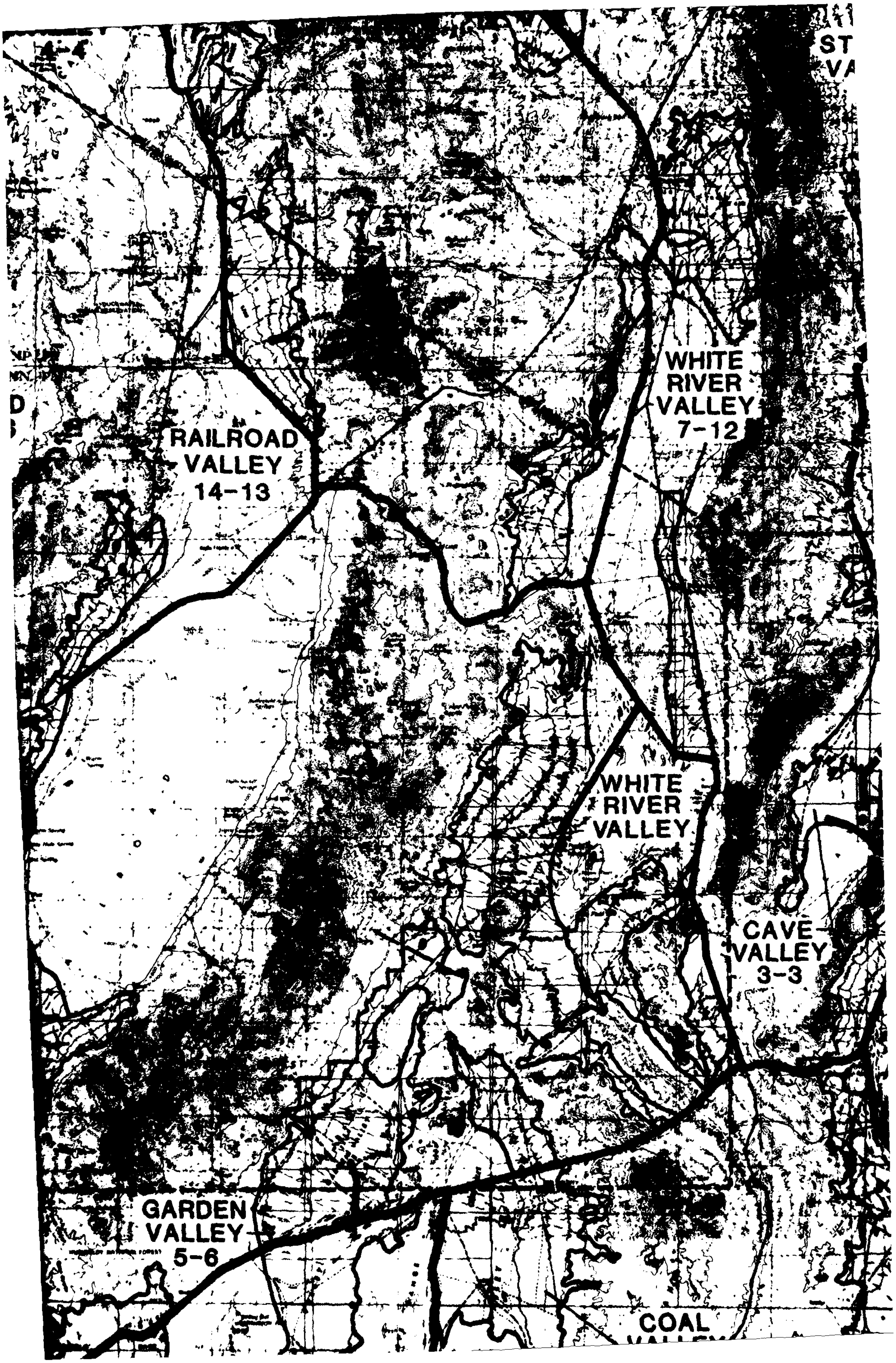
STONE
CABIN
VALLEY
6-8
HOT CREEK
VALLEY
5-6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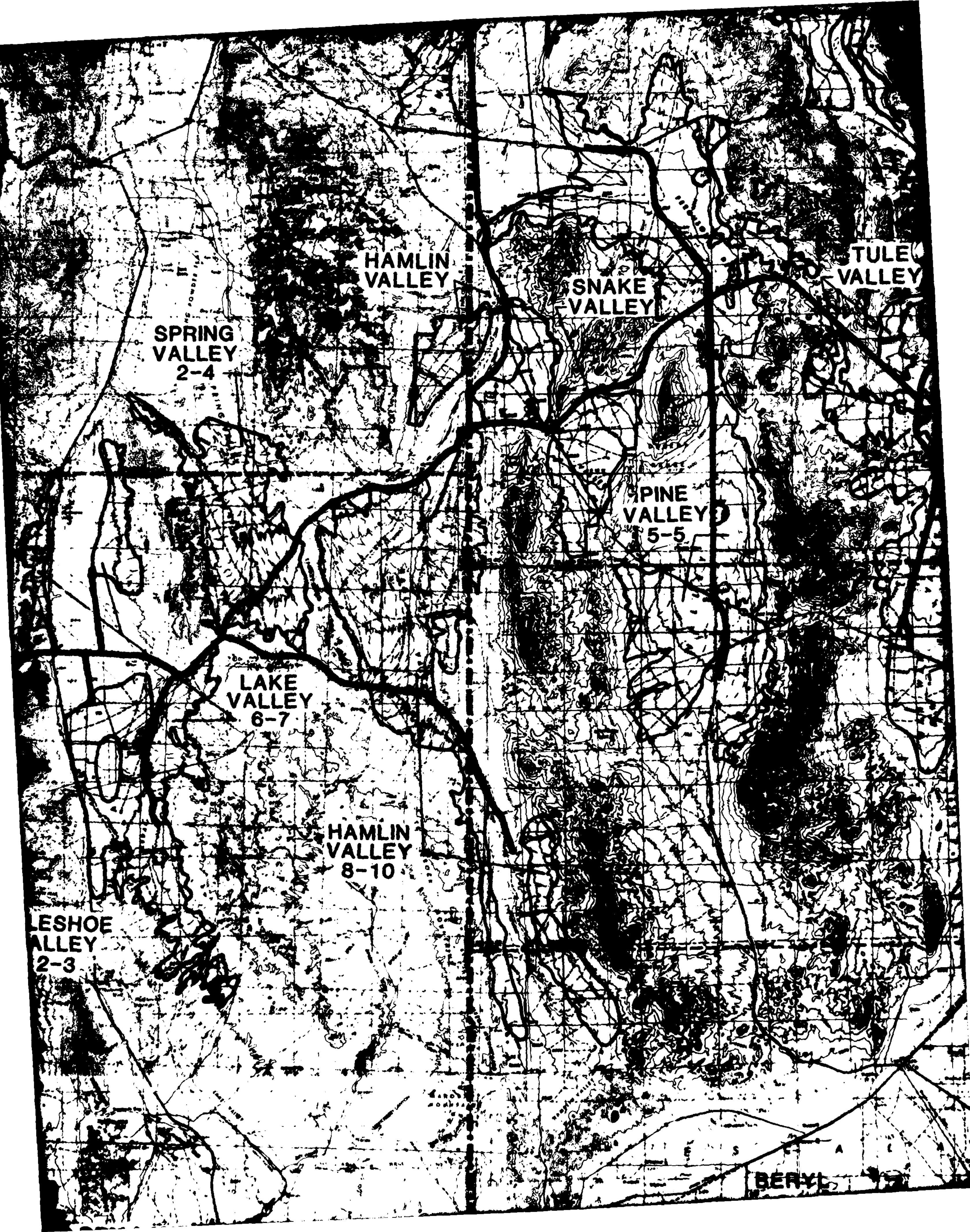
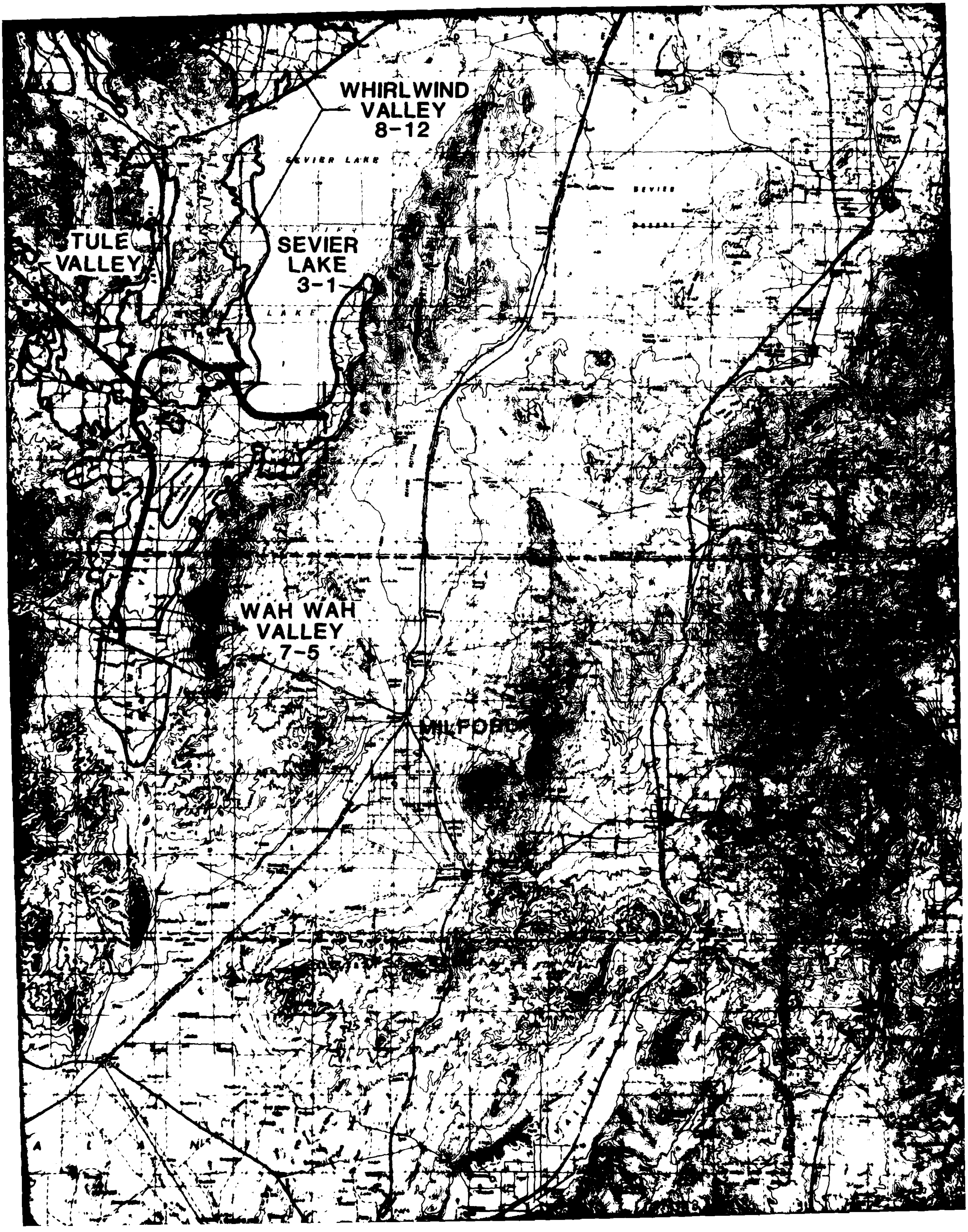
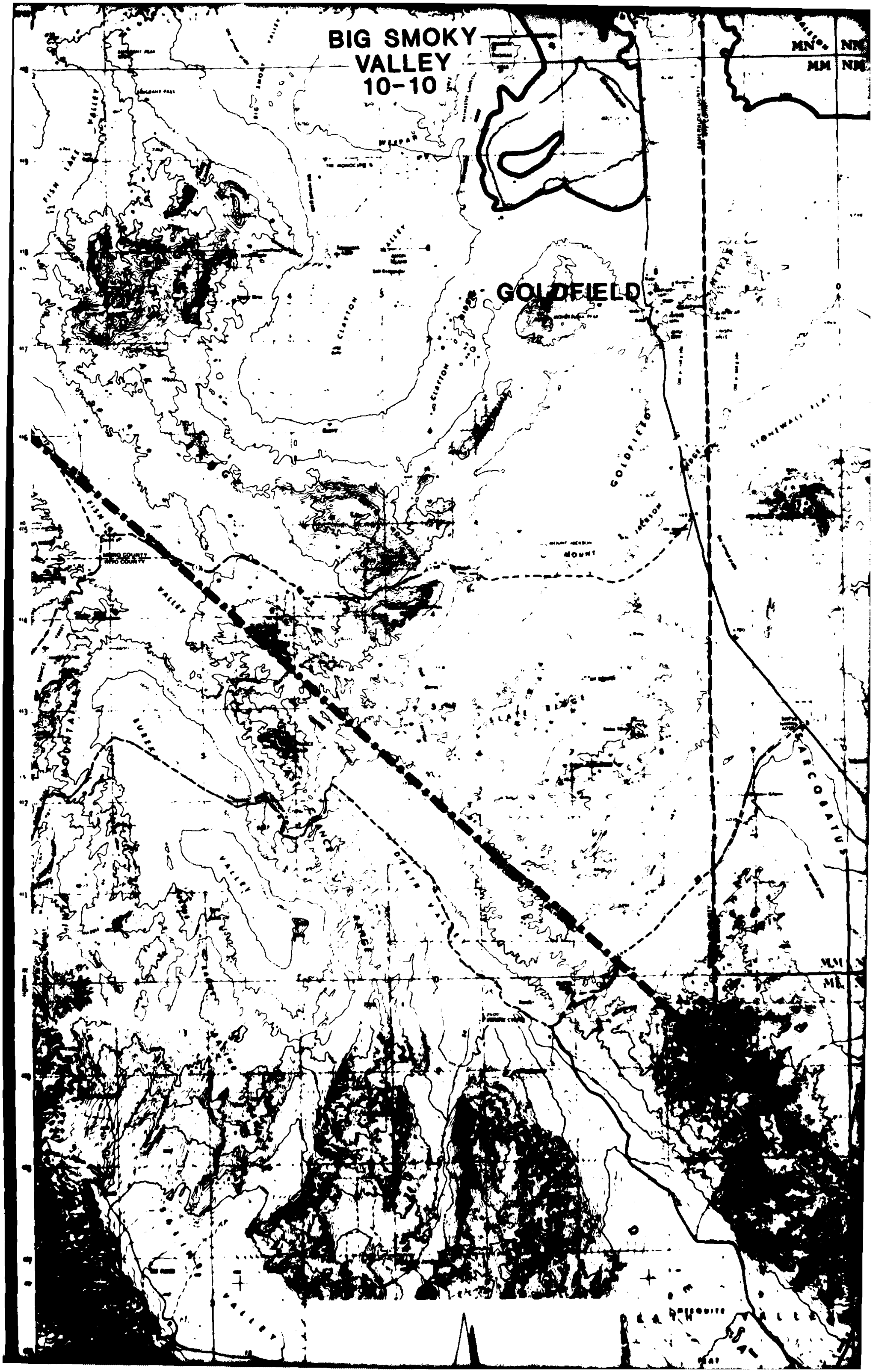
VALLEY
14-13
WHITE
RIVER
VALLEY
7-12
WHITE
RIVER
VALLEY
CAVE
VALLEY
3-3
GARDEN
VALLEY
5-6
COAL

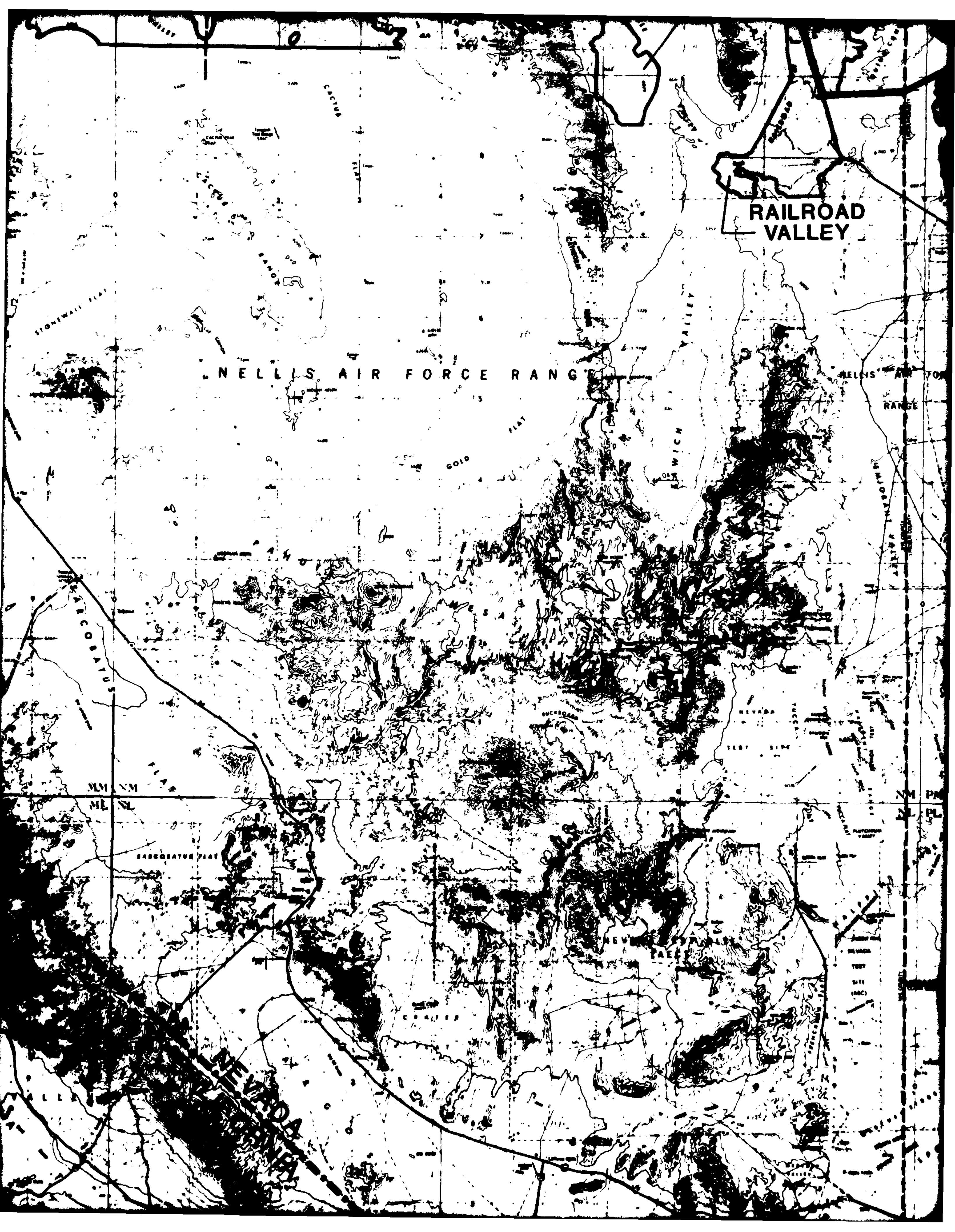

HAMLIN VALLEY
SNAKE VALLEY
TULE VALLEY
SPRING VALLEY 2-4
PINE VALLEY 5-5
LAKE VALLEY 6-7
HAMLIN VALLEY 8-10
LESHOE ALLEY 2-3
BERYL

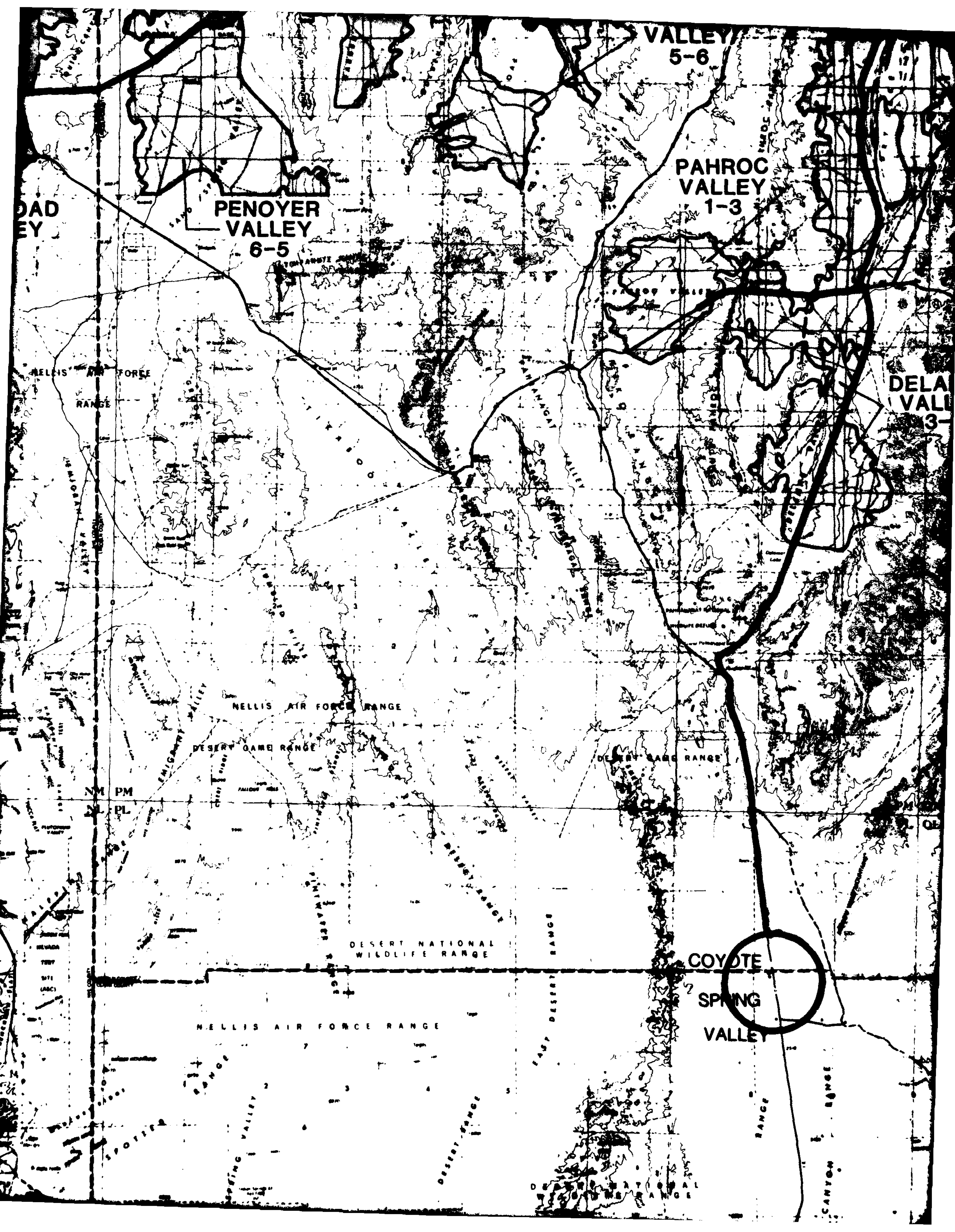


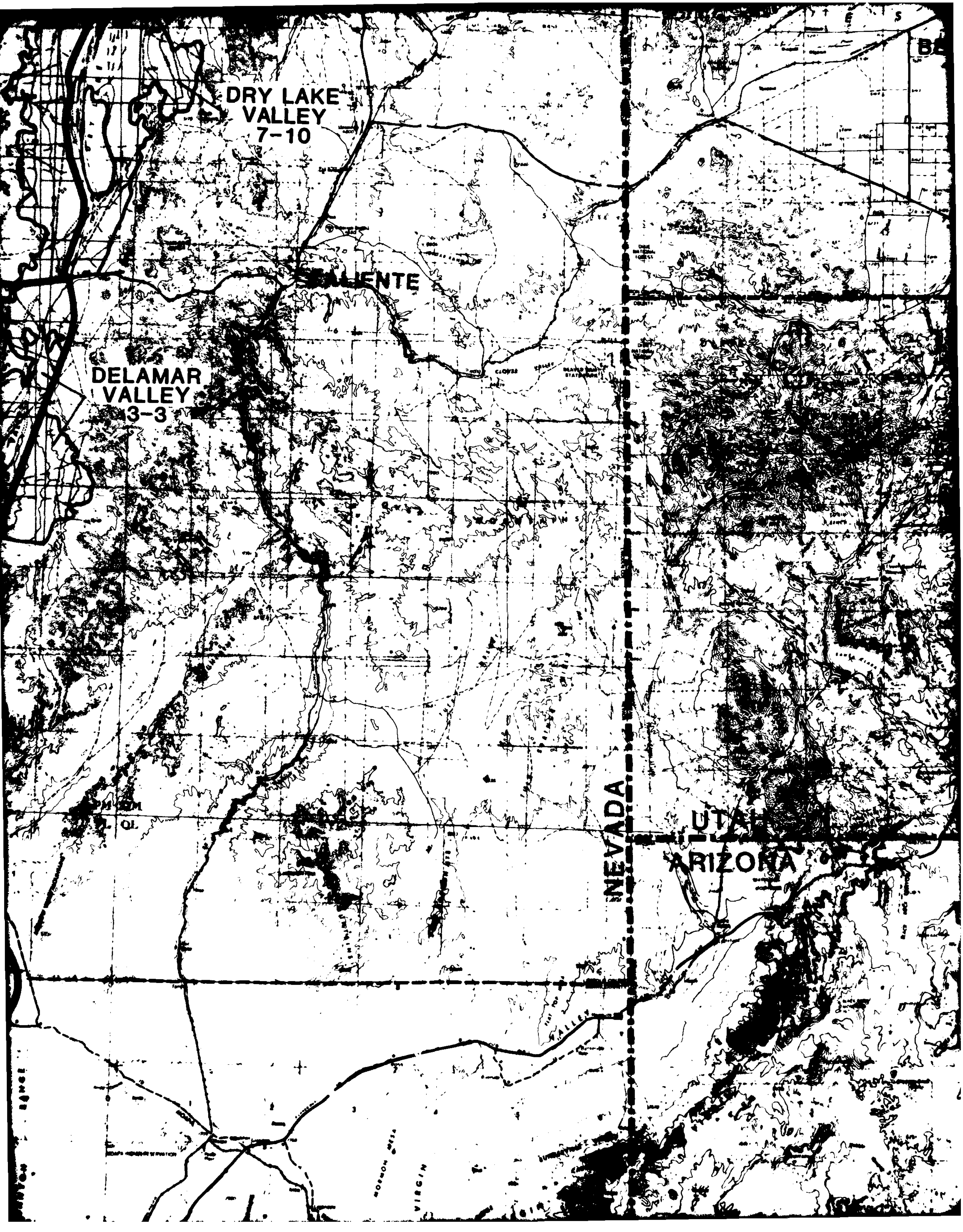
WHIRLWIND VALLEY 8-12
SEVIER LAKE
TULE VALLEY
SEVIER LAKE 3-1
WAH WAH VALLEY 7-5
MILFORD


WHIRLWIND
VALLEY
8-12
SEVIER LAKE
SEVIER
SEVIER
LAKE
3-1
AH WAH
VALLEY
7-5
MILFORD


BIG SMOKY
VALLEY
10-10
GOLDFIELD
CLAYTON
GOLDFIELD
MOUNT
SARCOBATUS
VALLEY
DEATH
MN
MM


RAILROAD
VALLEY
NELLIS AIR FORCE RANGE
STONEWALL FLAT
CACTUS
GOLD FLAT
SARCOBATUS FLAT
MM NM
ML NL
NM PM
NL PL
NEVADA


VALLEY
5-6
PAHROC
VALLEY
1-3
PENOYER
VALLEY
6-5
DELA
VALL
3-
NELLIS AIR FORCE RANGE
DESERT GAME RANGE
DESERT NATIONAL
WILDLIFE RANGE
COYOTE
SPRING
VALLEY
NELLIS AIR FORCE RANGE
NM PM
NL PL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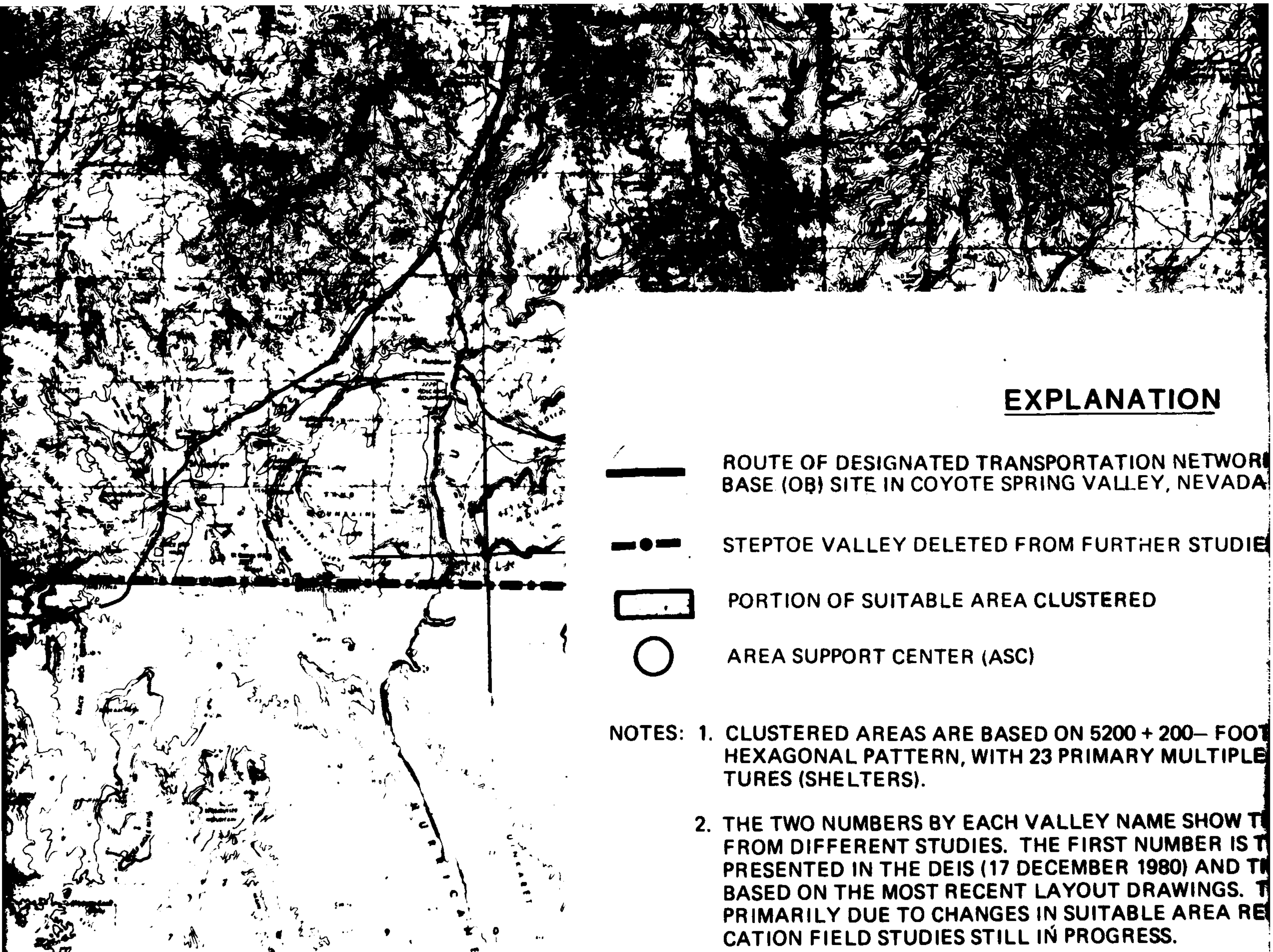
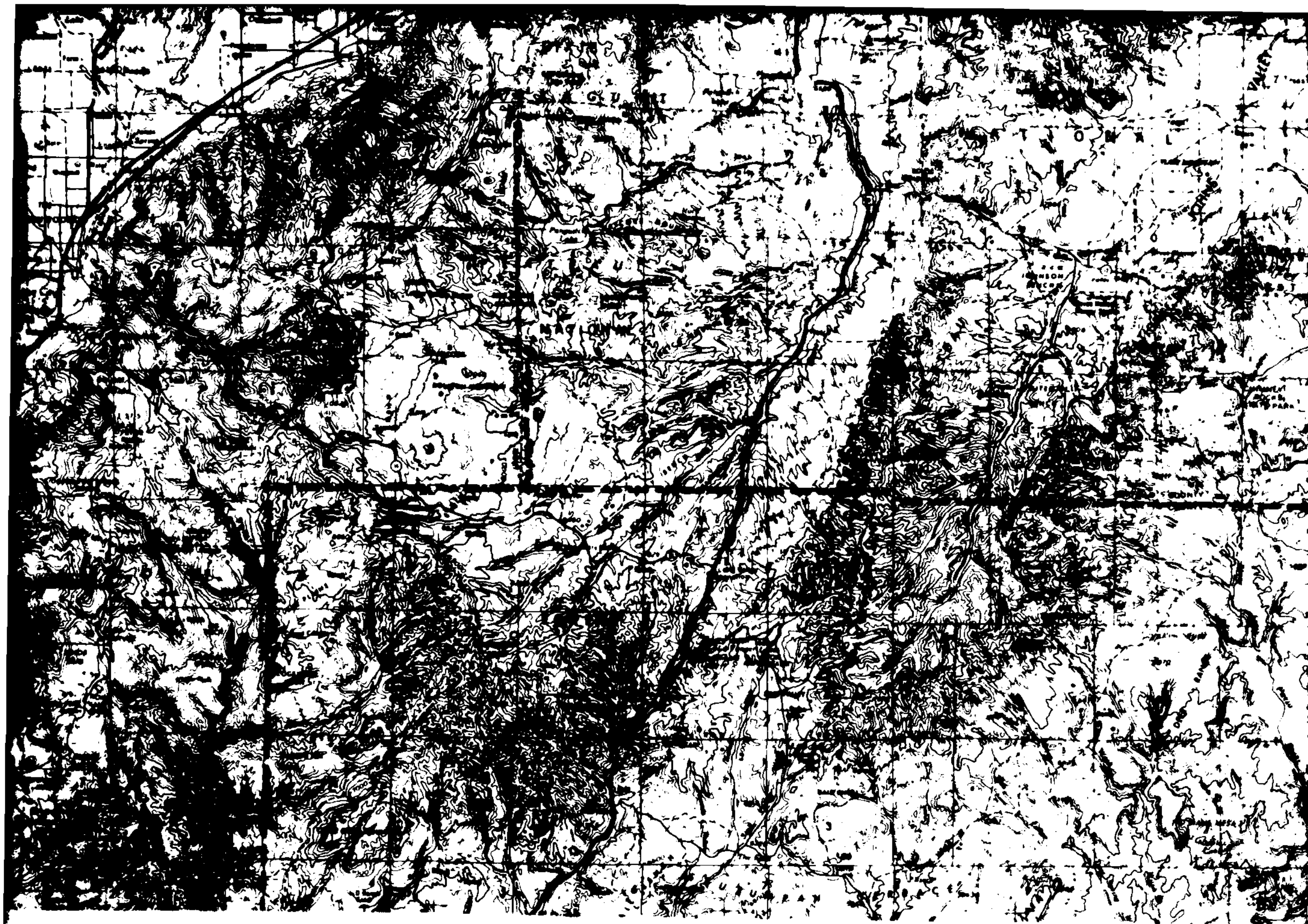
CALIENTE
DELAMAR VALLEY 13-3
NEVADA
UTAH
ARIZONA


EXPLANATION
ROUTE OF DESIGNATED TRANSPORTATION NETWOR
BASE (OB) SITE IN COYOTE SPRING VALLEY, NEVADA
STEPTOE VALLEY DELETED FROM FURTHER STUDIE
PORTION OF SUITABLE AREA CLUSTERED
AREA SUPPORT CENTER (ASC)
NOTES: 1. CLUSTERED AREAS ARE BASED ON 5200 + 200– FOO
HEXAGONAL PATTERN, WITH 23 PRIMARY MULTIPLE
TURES (SHELTERS).
2. THE TWO NUMBERS BY EACH VALLEY NAME SHOW T
FROM DIFFERENT STUDIES. THE FIRST NUMBER IS T
PRESENTED IN THE DEIS (17 DECEMBER 1980) AND T
BASED ON THE MOST RECENT LAYOUT DRAWINGS. T
PRIMARILY DUE TO CHANGES IN SUITABLE AREA RE
CATION FIELD STUDIES STILL IN PROGRESS.



EXPLANATION

ROUTE OF DESIGNATED TRANSPORTATION NETWORK (DTN) FOR OPERATIONAL BASE (OB) SITE IN COYOTE SPRING VALLEY, NEVADA

STEPTOE VALLEY DELETED FROM FURTHER STUDIES AS OF SEPTEMBER 1980

PORTION OF SUITABLE AREA CLUSTERED

AREA SUPPORT CENTER (ASC)

NOTES: 1. CLUSTERED AREAS ARE BASED ON 5200 + 200– FOOT SPACING, 2/3 FILLED HEXAGONAL PATTERN, WITH 23 PRIMARY MULTIPLE PROTECTIVE STRUCTURES (SHELTERS).

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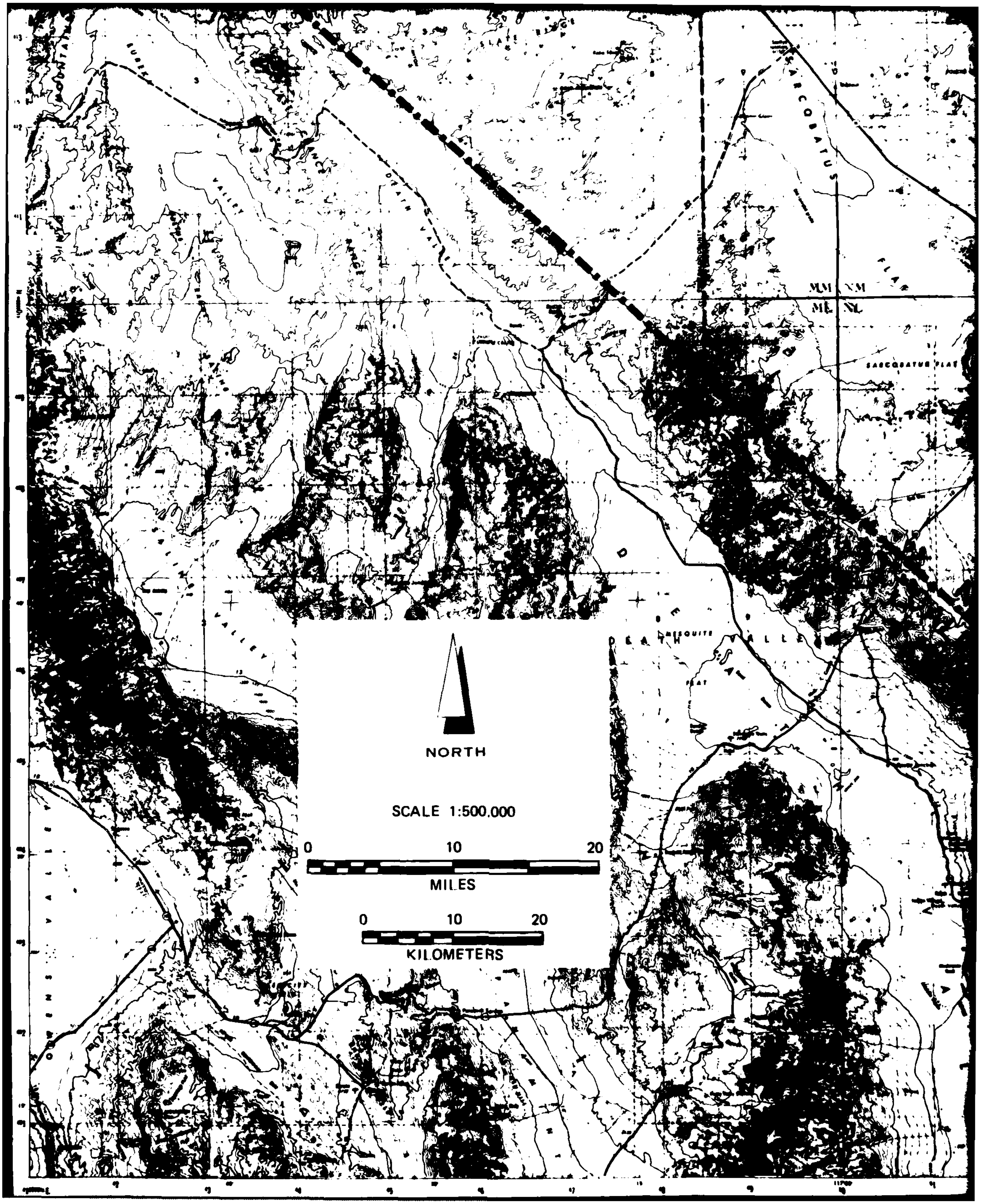
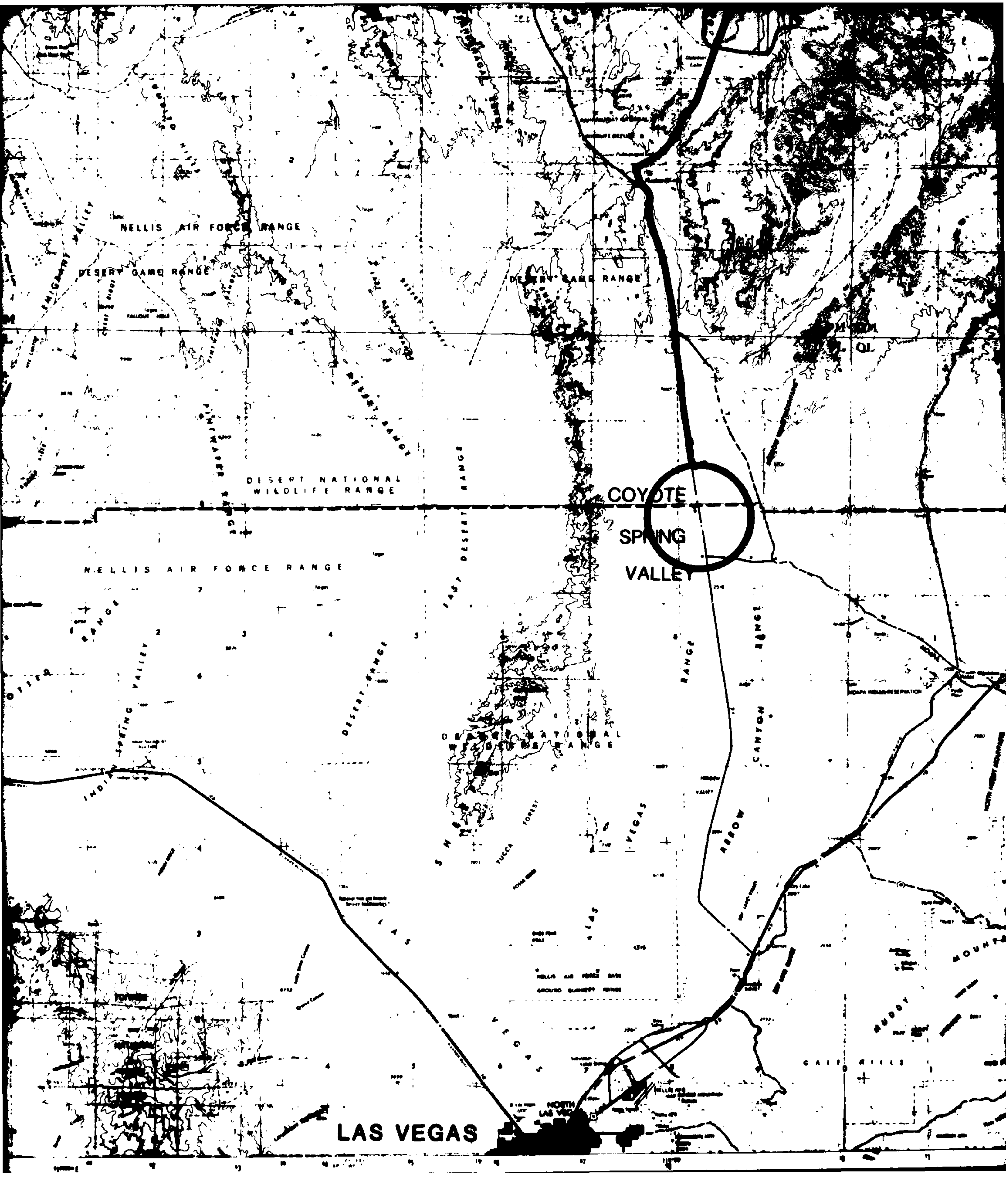
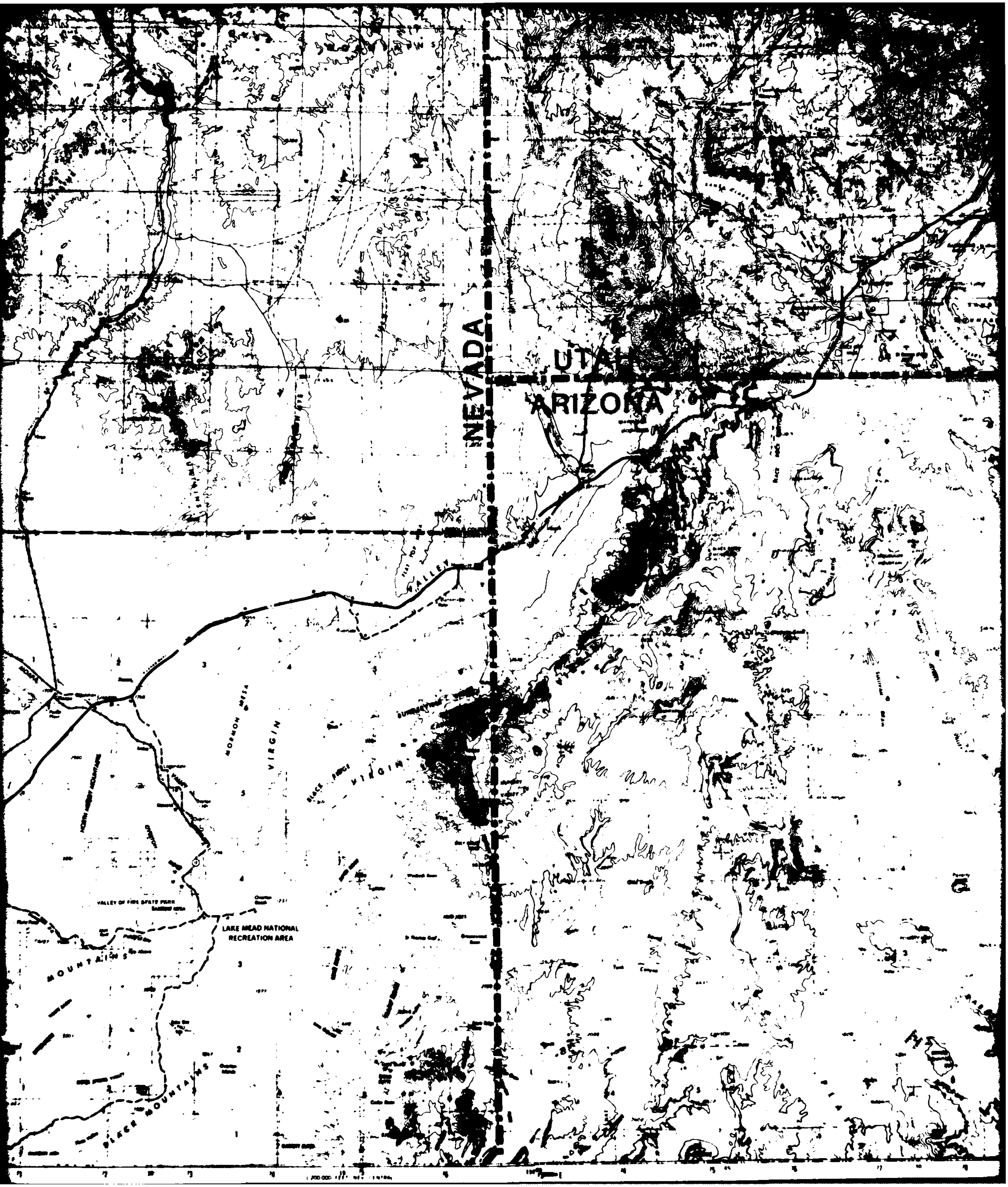

NORTH
SCALE 1:500,000
0 10 20
MILES
0 10 20
KILOMETERS
SARCOBATUS
SARCOBATUS FLAT
MESQUITE

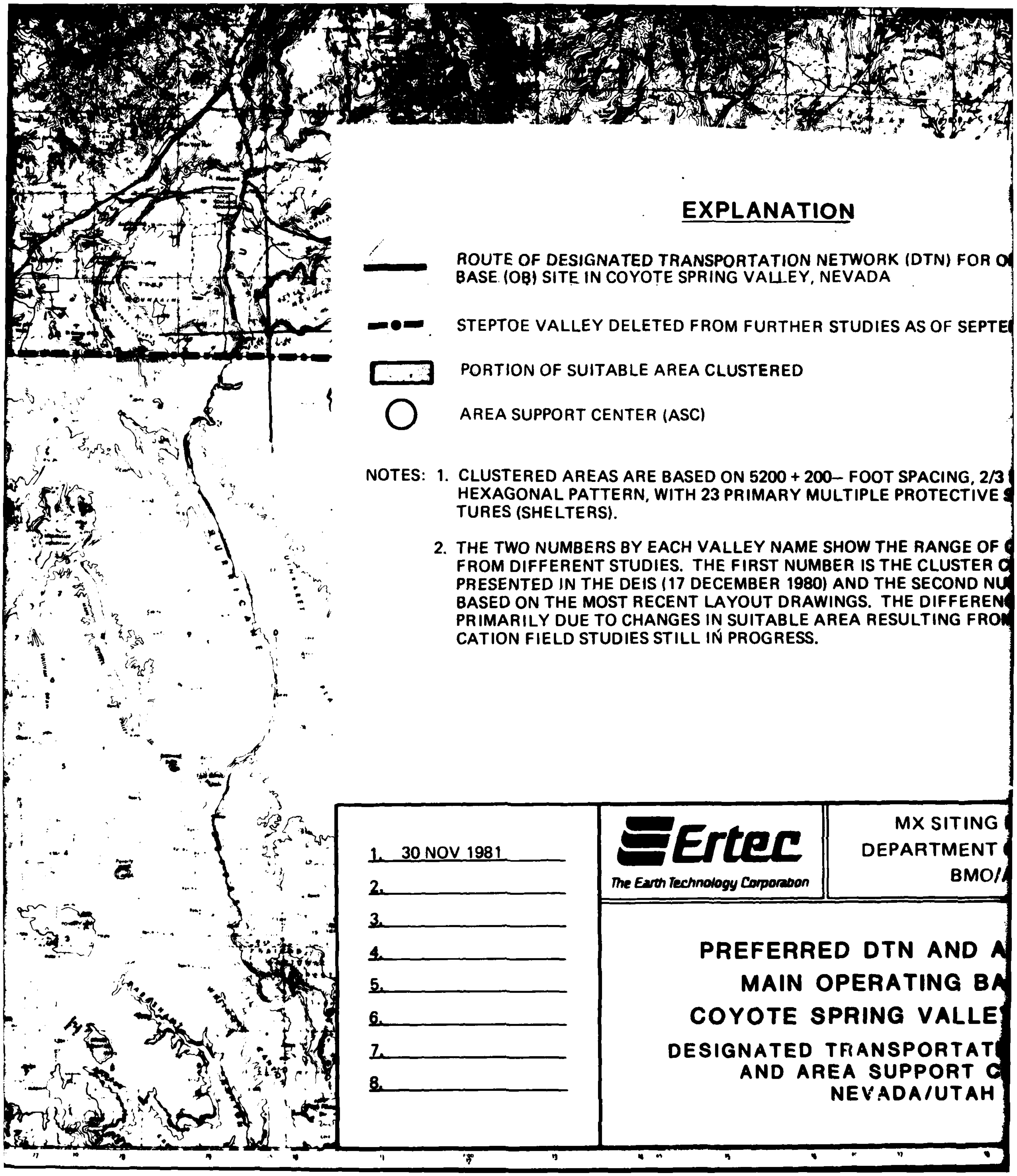
NEVADA
NM PM
NL PL
NEVADA
TEST
SITE
(AEC)



NELLIS AIR FORCE RANGE
DESERT GAME RANGE
DESERT GAME RANGE
DESERT RANGE
PINTWATER RANGE
DESERT NATIONAL WILDLIFE RANGE
COYOTE SPRING VALLEY
NELLIS AIR FORCE RANGE
EAST DESERT RANGE
DESERT RANGE
INDIAN SPRING VALLEY
DESERT NATIONAL WILDLIFE RANGE
ARROW CANYON RANGE
LAS VEGAS
NELLIS AIR FORCE BASE GROUND GUNNERY RANGE
MUDDY MOUNTAINS
GALE HILLS
NORTH LAS VEGAS
LAS VEGAS



NEVADA
UTAH
ARIZONA
VIRGIN
MORMON MESA
VALLEY OF FIRE STATE PARK
LAKE MEAD NATIONAL
RECREATION AREA
BLACK MOUNTAINS



EXPLANATION

ROUTE OF DESIGNATED TRANSPORTATION NETWORK (DTN) FOR O
BASE (OB) SITE IN COYOTE SPRING VALLEY, NEVADA

STEPTOE VALLEY DELETED FROM FURTHER STUDIES AS OF SEPTE

PORTION OF SUITABLE AREA CLUSTERED

AREA SUPPORT CENTER (ASC)

NOTES: 1. CLUSTERED AREAS ARE BASED ON 5200 + 200– FOOT SPACING, 2/3 HEXAGONAL PATTERN, WITH 23 PRIMARY MULTIPLE PROTECTIVE S TURES (SHELTERS).

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MX SITING
DEPARTMENT
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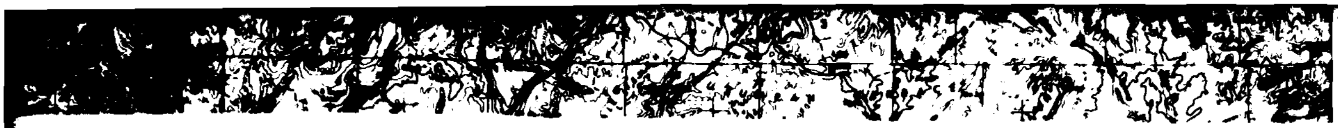
COYOTE SPRING VALLE
DESIGNATED TRANSPORTAT
AND AREA SUPPORT C
NEVADA/UTAH



EXPLANATION

ROUTE OF DESIGNATED TRANSPORTATION NETWORK (DTN) FOR OPERATIONAL BASE (OB) SITE IN COYOTE SPRING VALLEY, NEVADA

STEPTOE VALLEY DELETED FROM FURTHER STUDIES AS OF SEPTEMBER 1980

PORTION OF SUITABLE AREA CLUSTERED

AREA SUPPORT CENTER (ASC)

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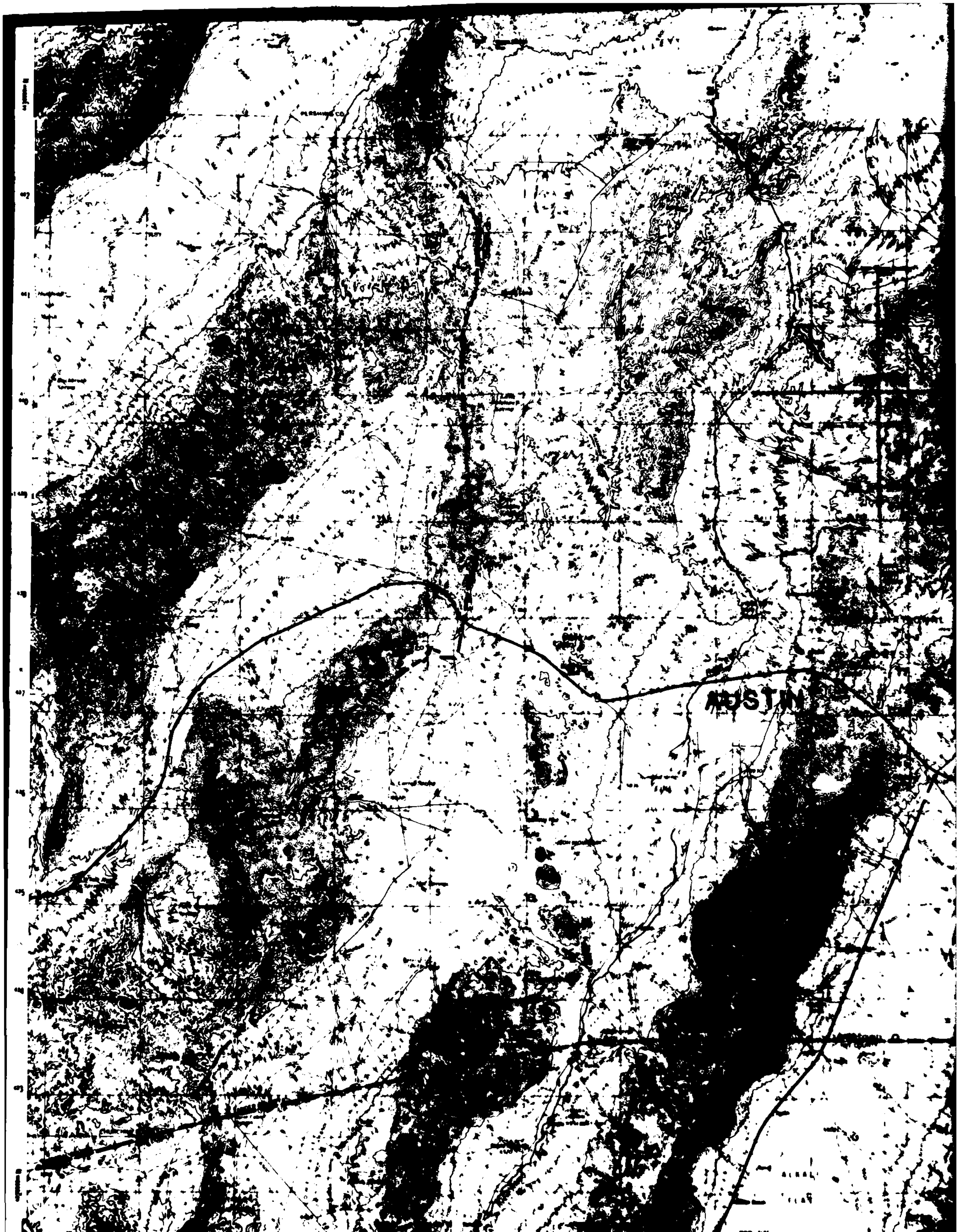
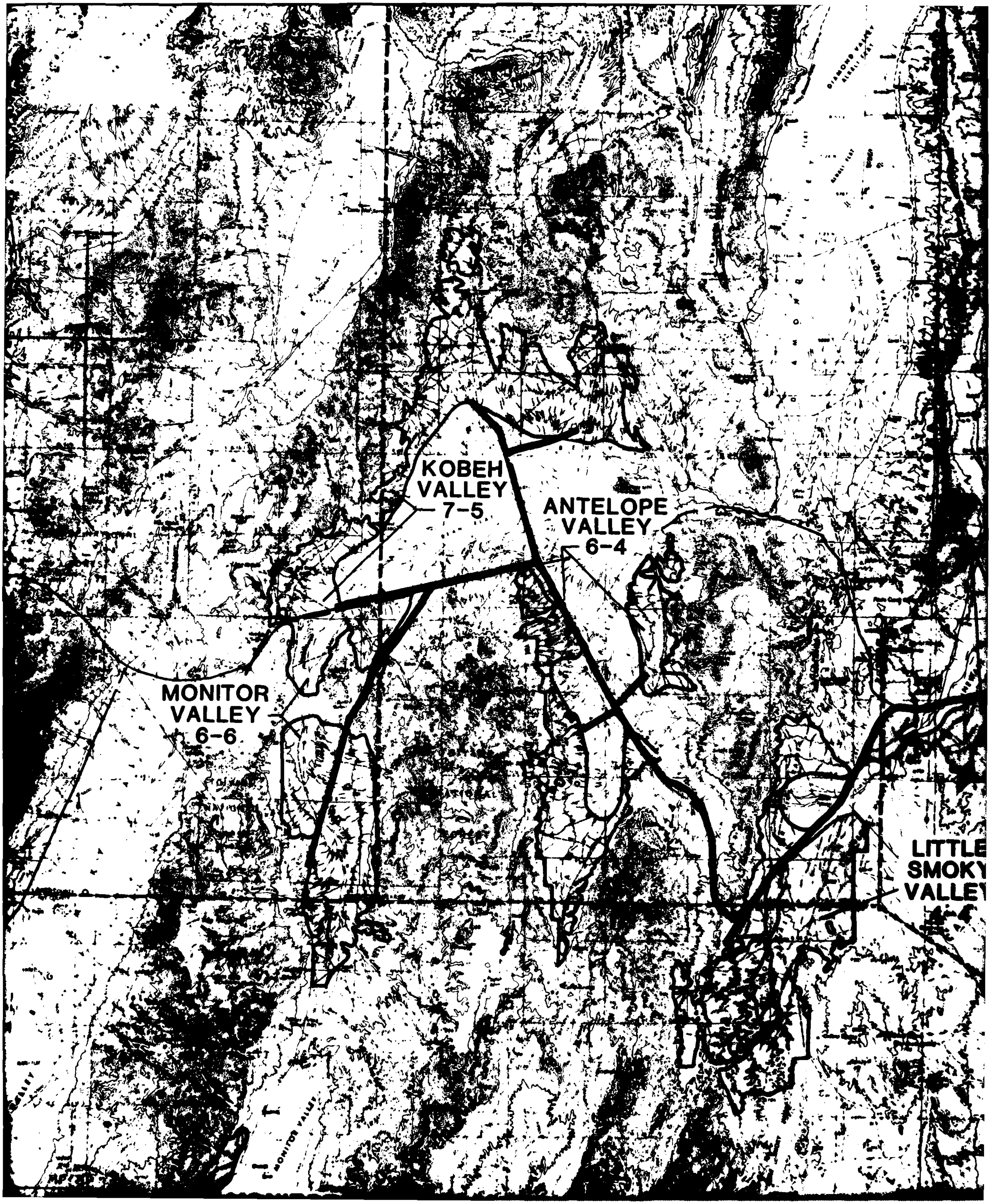
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

PREFERRED DTN AND ASC SITES
MAIN OPERATING BASE AT
COYOTE SPRING VALLEY, NEVADA

DESIGNATED TRANSPORTATION NETWORK
AND AREA SUPPORT CENTERS
NEVADA/UTAH

VOLUME II PART I
DRAWING 7-1


AUSTIN
BIG SMOKY VALLEY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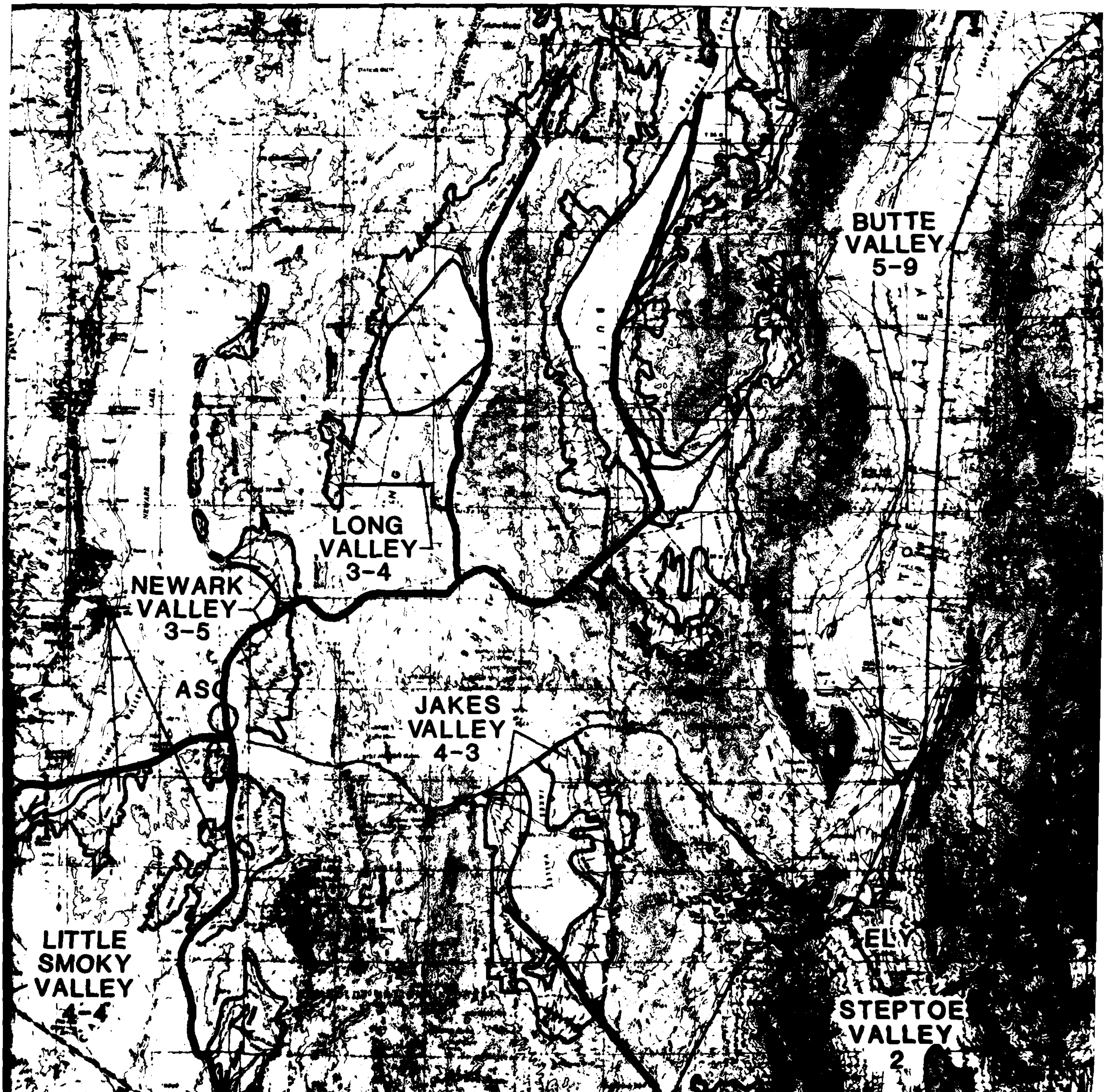
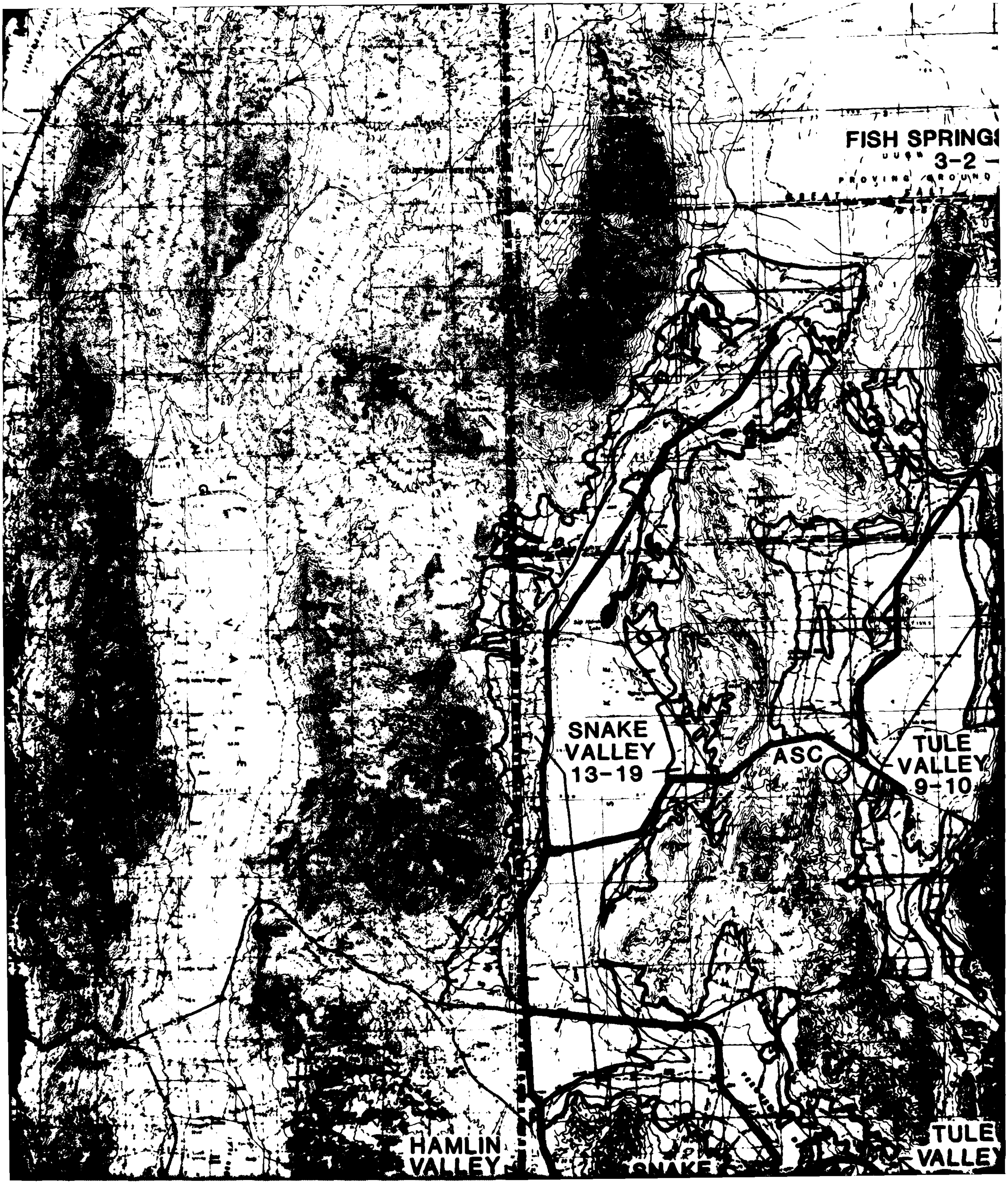
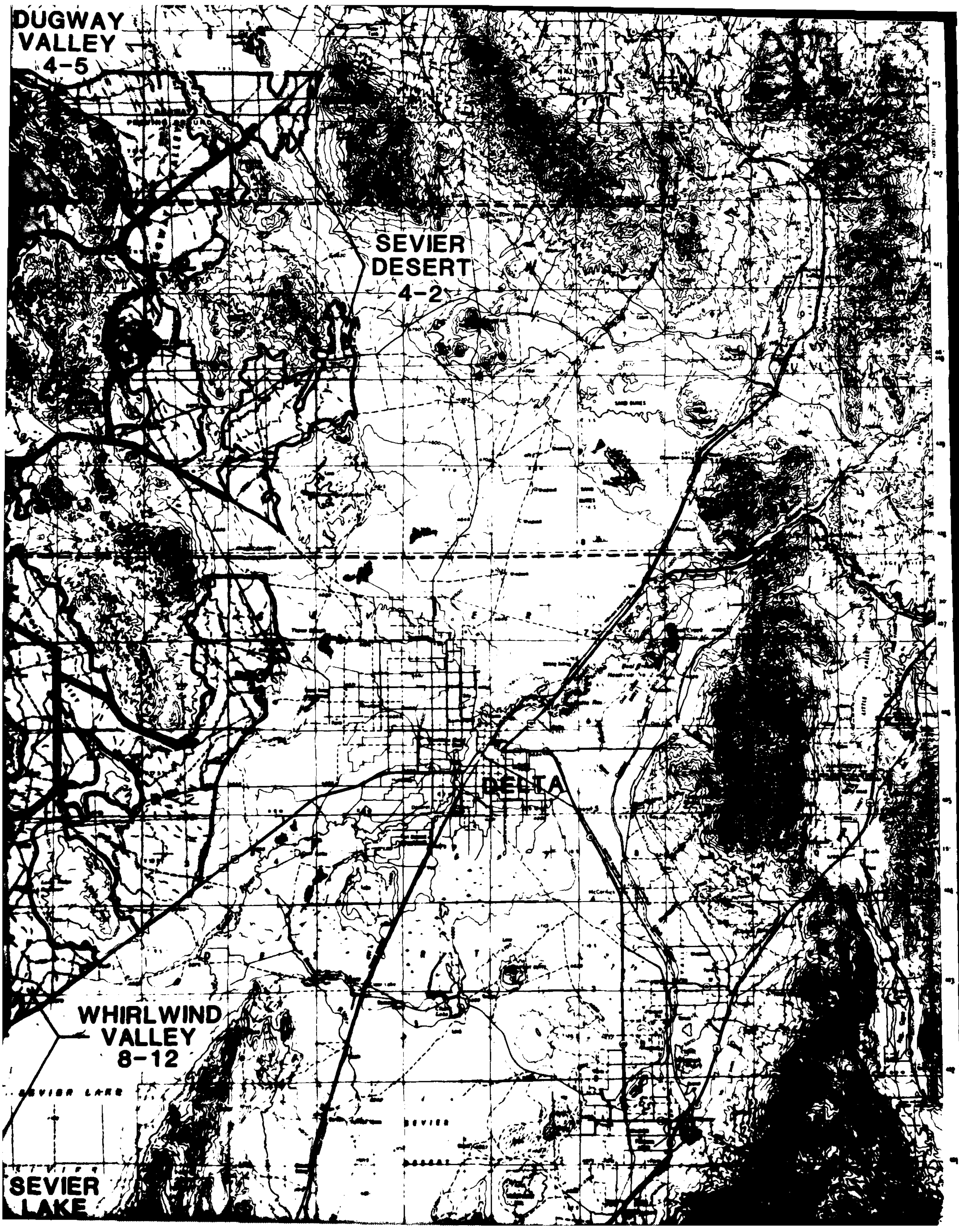
ANTELOPE VALLEY 6-4
MONITOR VALLEY 6-6
LITTLE SMOKY VALLEY


BUTTE
VALLEY
5-9
LONG
VALLEY
3-4
NEWARK
VALLEY
3-5
AS
JAKES
VALLEY
4-3
LITTLE
SMOKY
VALLEY
4-4
ELY
STEPTOE
VALLEY
2


FISH SPRINGS
3-2
SNAKE
VALLEY
13-19
ASC
TULE
VALLEY
9-10
HAMLIN
VALLEY
SNAKE
TULE
VALLEY


DUGWAY VALLEY 4-5
FISH SPRINGS FLAT 3-2
SEVIER DESERT 4-2
TULE VALLEY 9-10
DELTA
WHIRLWIND VALLEY 8-12
TULE VALLEY
SEVIER LAKE



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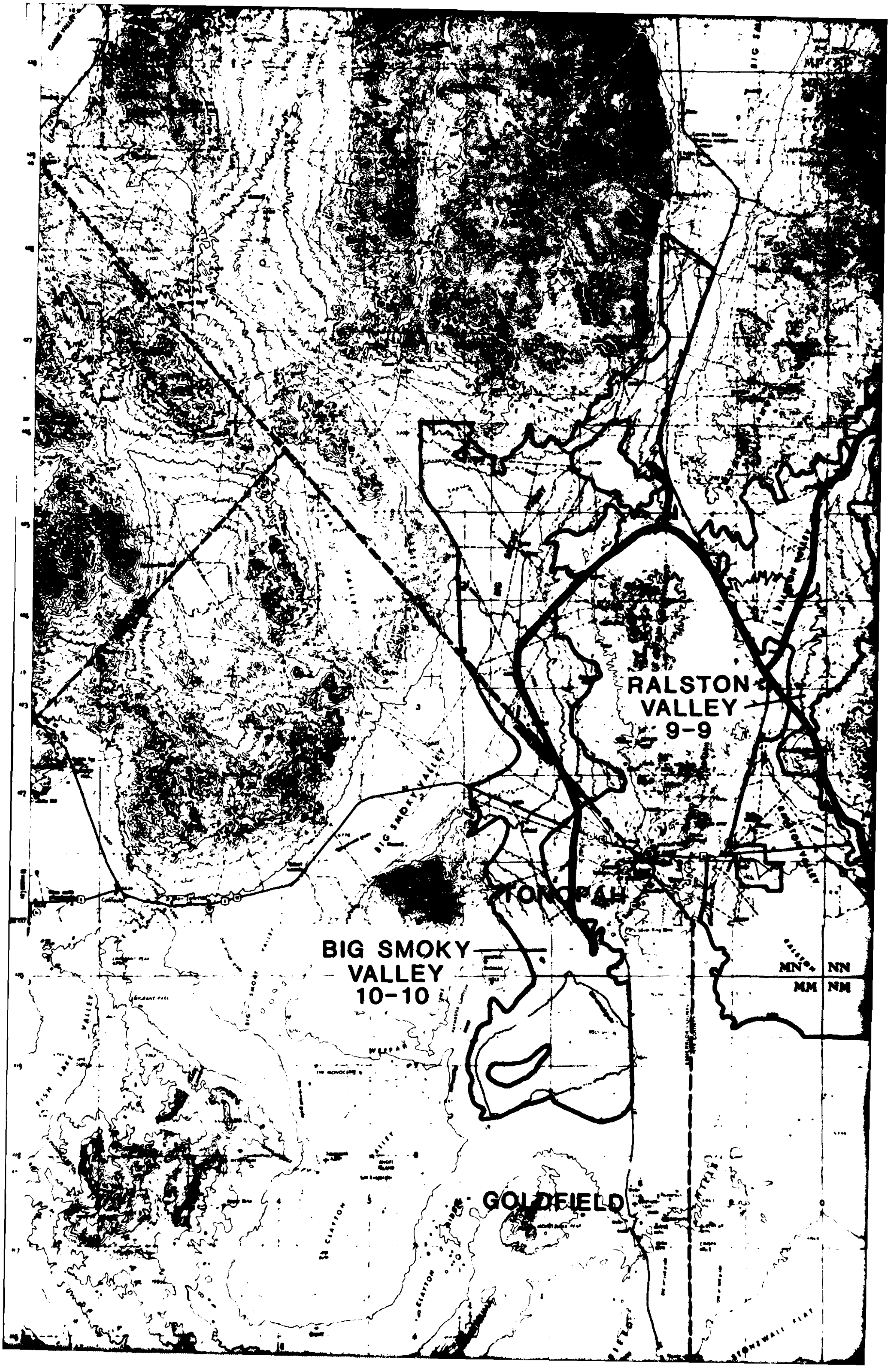
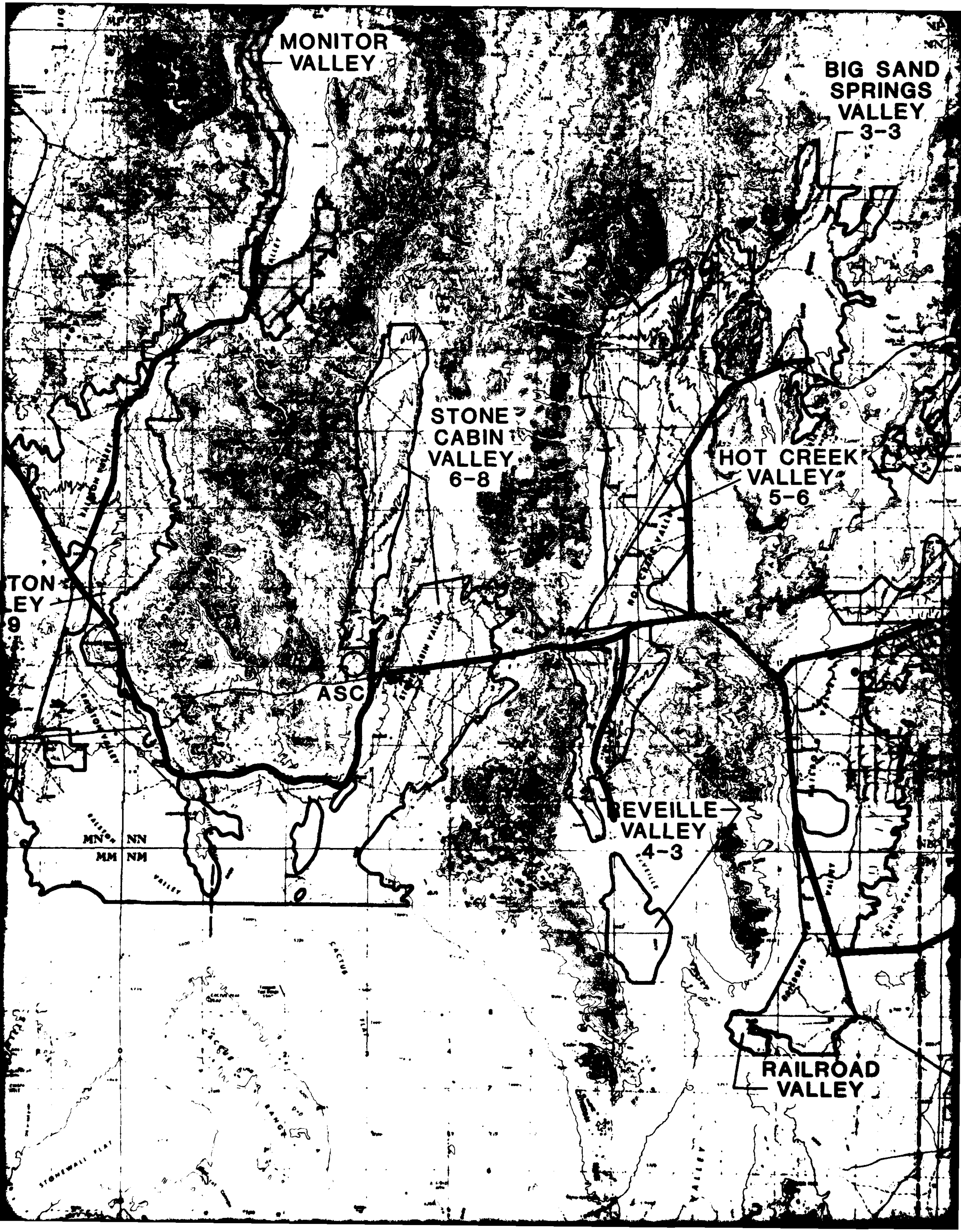
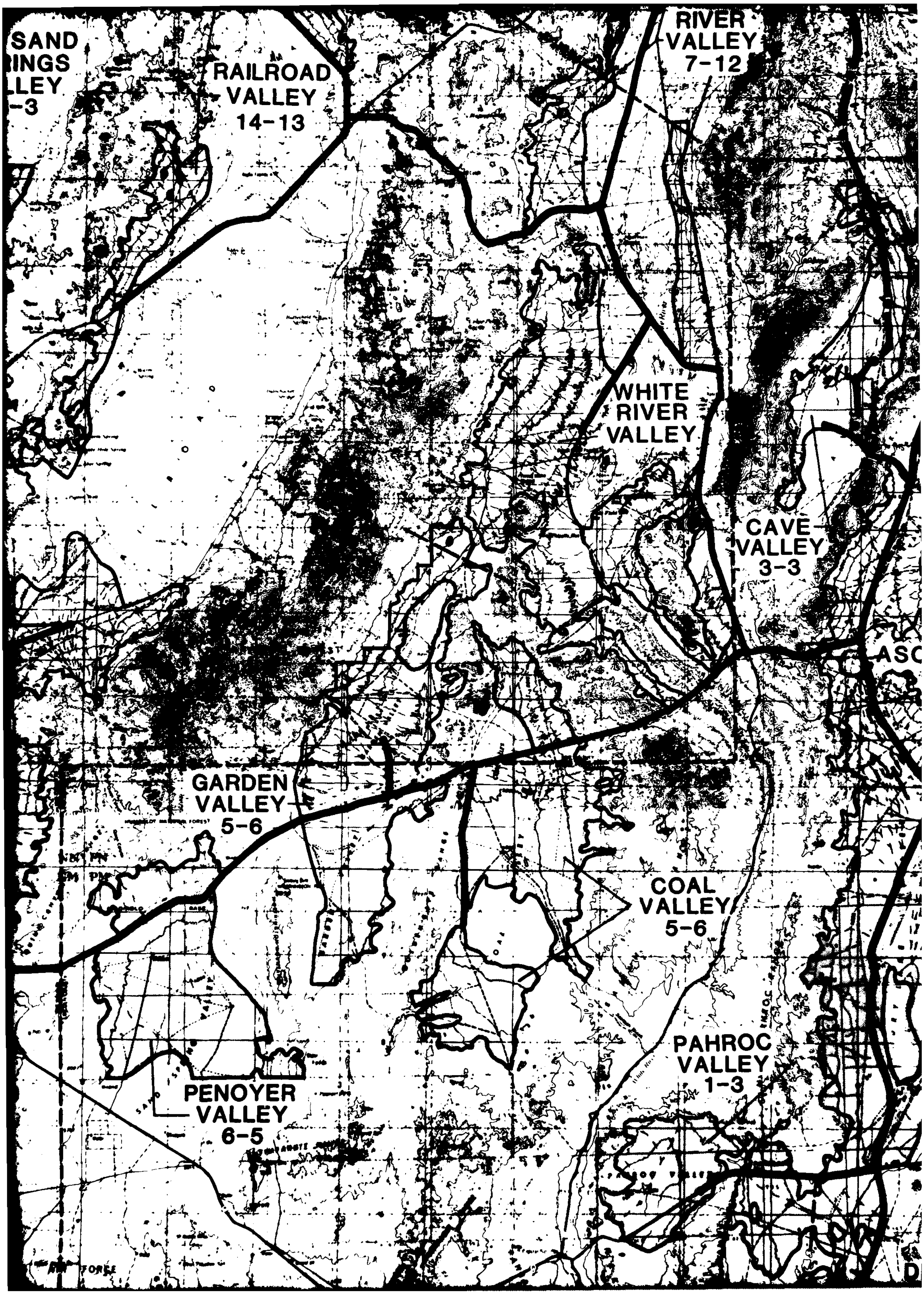
SEVIER DESERT 4-2
DELTA
WHIRLWIND VALLEY 8-12
SEVIER LAKE



RALSTON VALLEY 9-9
TONOPAH
BIG SMOKY VALLEY 10-10
GOLDFIELD
MN
NN
MM
NM



MONITOR VALLEY
BIG SAND SPRINGS VALLEY 3-3
STONE CABIN VALLEY 6-8
HOT CREEK VALLEY 5-6
TON
LEY
9
ASC
REVEILLE VALLEY 4-3
RAILROAD VALLEY
MN NN
MM NM



SAND
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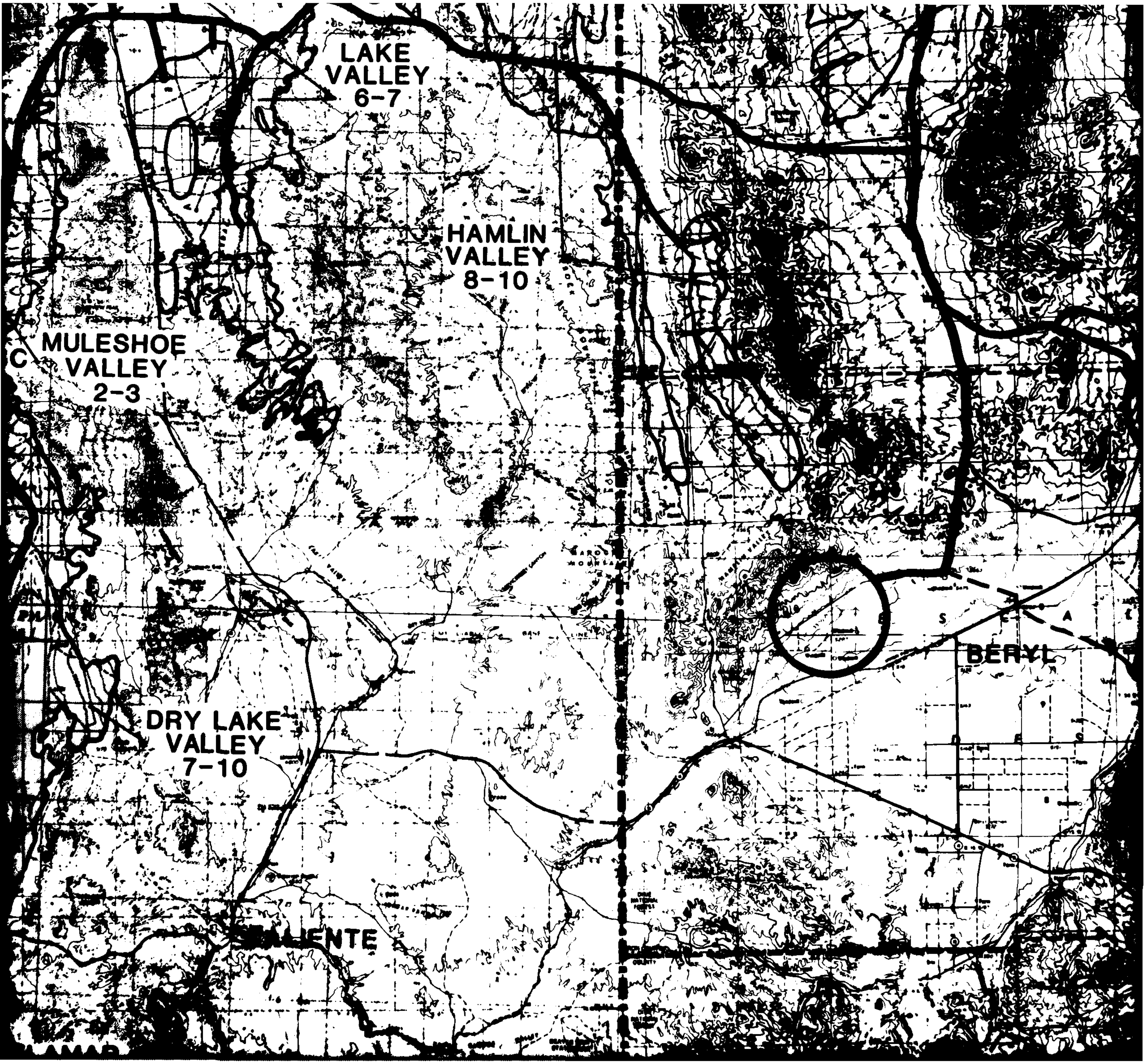
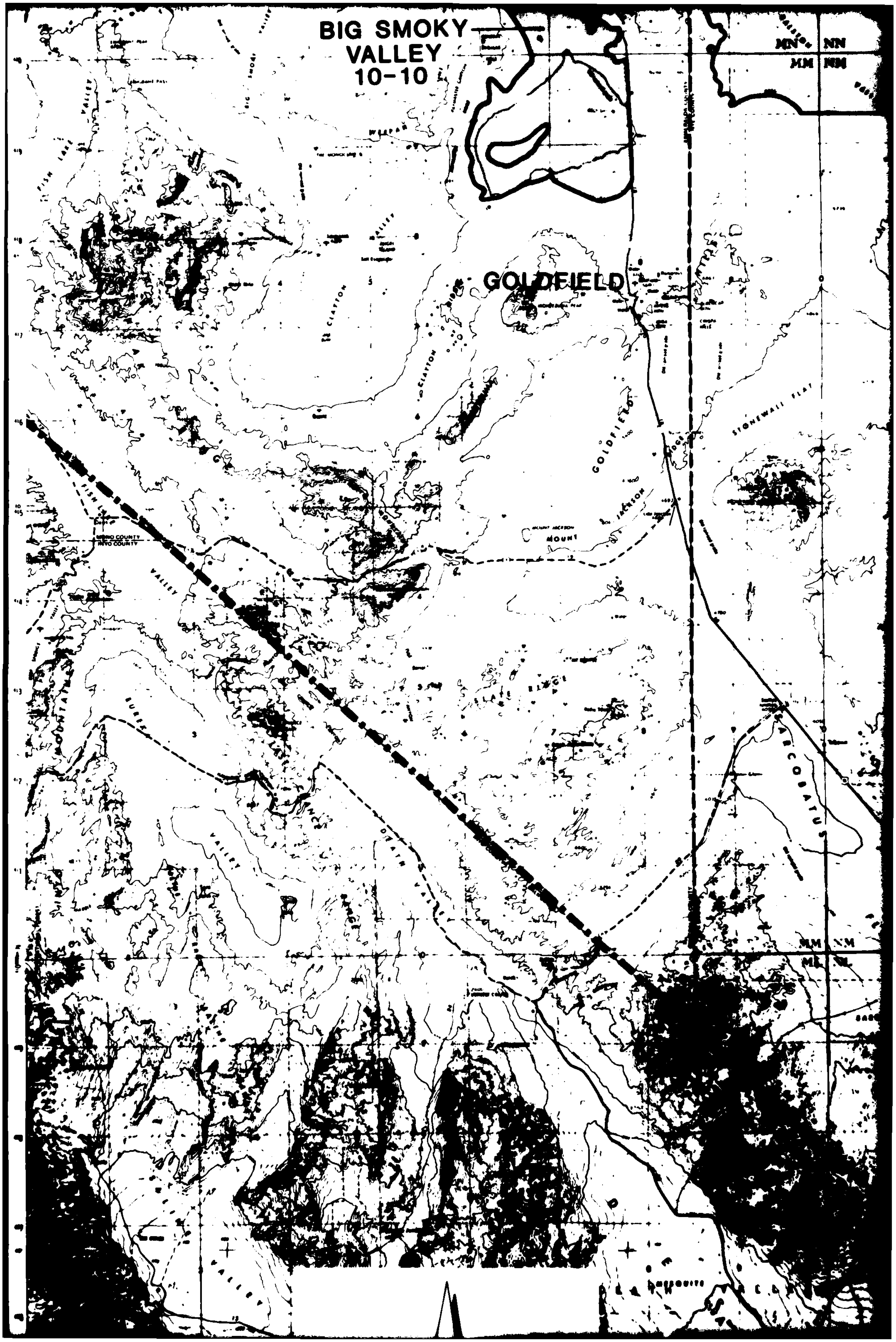
LLEY
3
RAILROAD
VALLEY
14-13
RIVER
VALLEY
7-12
WHITE
RIVER
VALLEY
CAVE
VALLEY
3-3
ASC
GARDEN
VALLEY
5-6
COAL
VALLEY
5-6
PAHROC
VALLEY
1-3
PENOYER
VALLEY
6-5

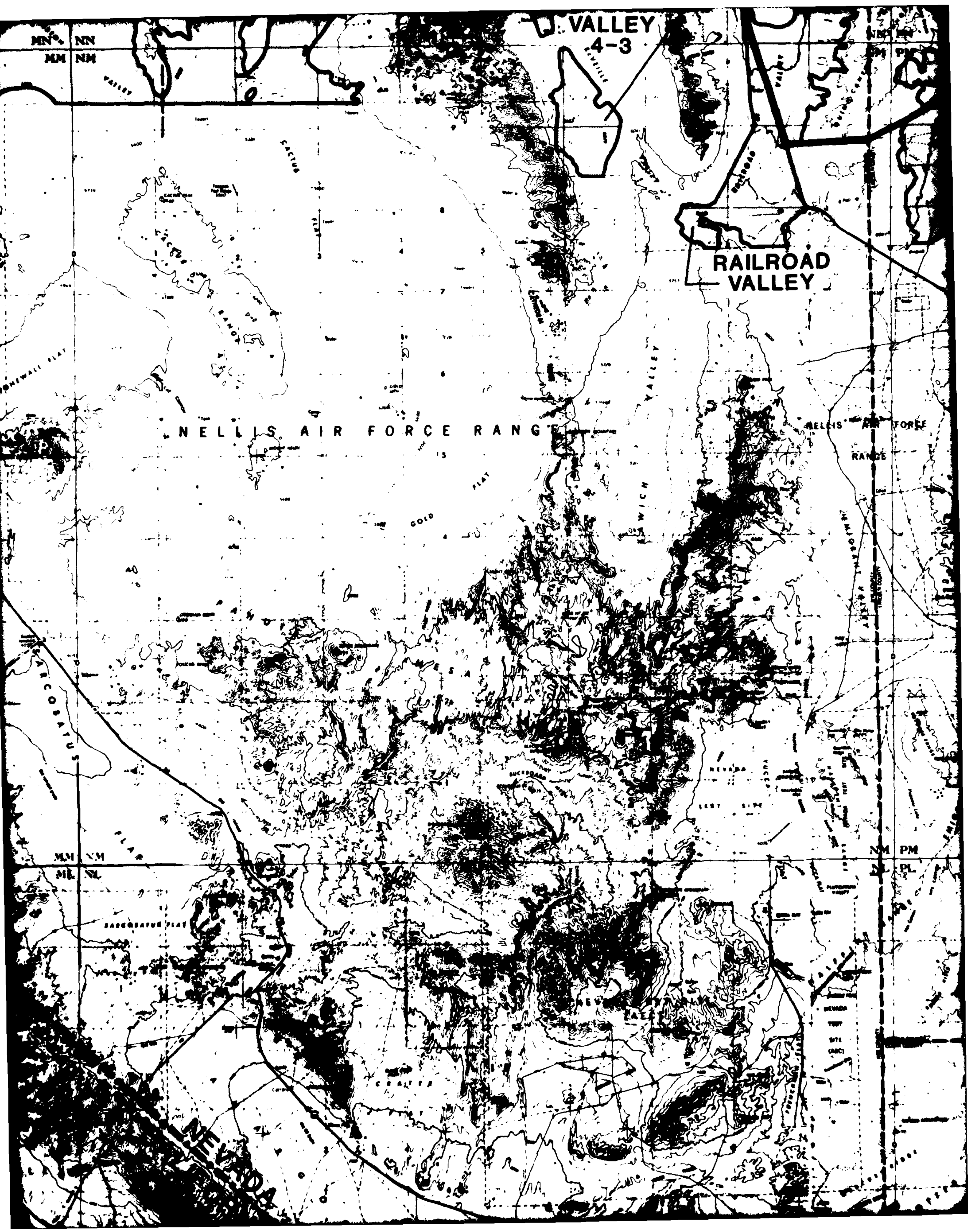


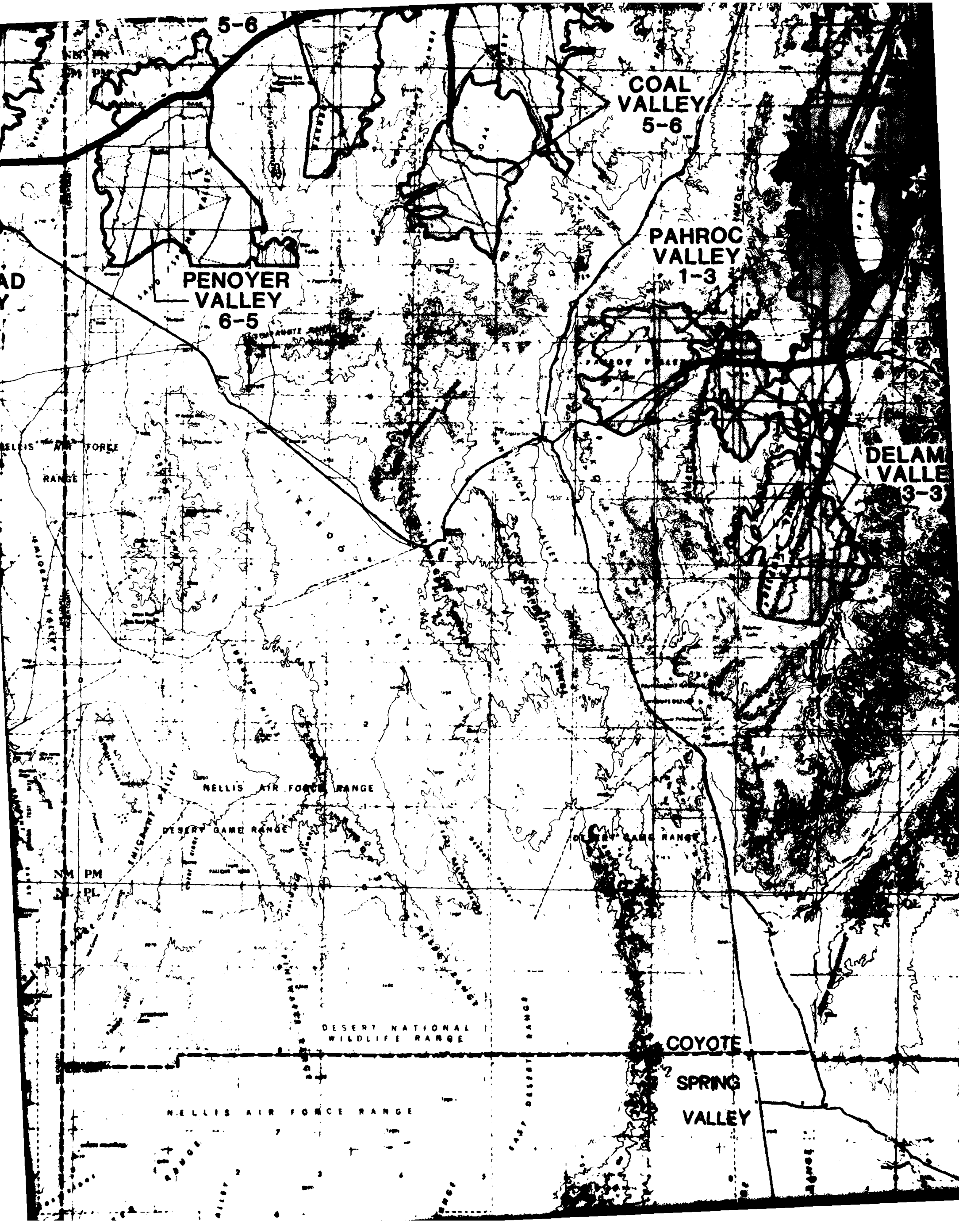
LAKE VALLEY 6-7
HAMLIN VALLEY 8-10
MULESHOE VALLEY 2-3
DRY LAKE VALLEY 7-10
BERYL

WAH WAH
VALLEY
7-5
MILFORD
BERYL

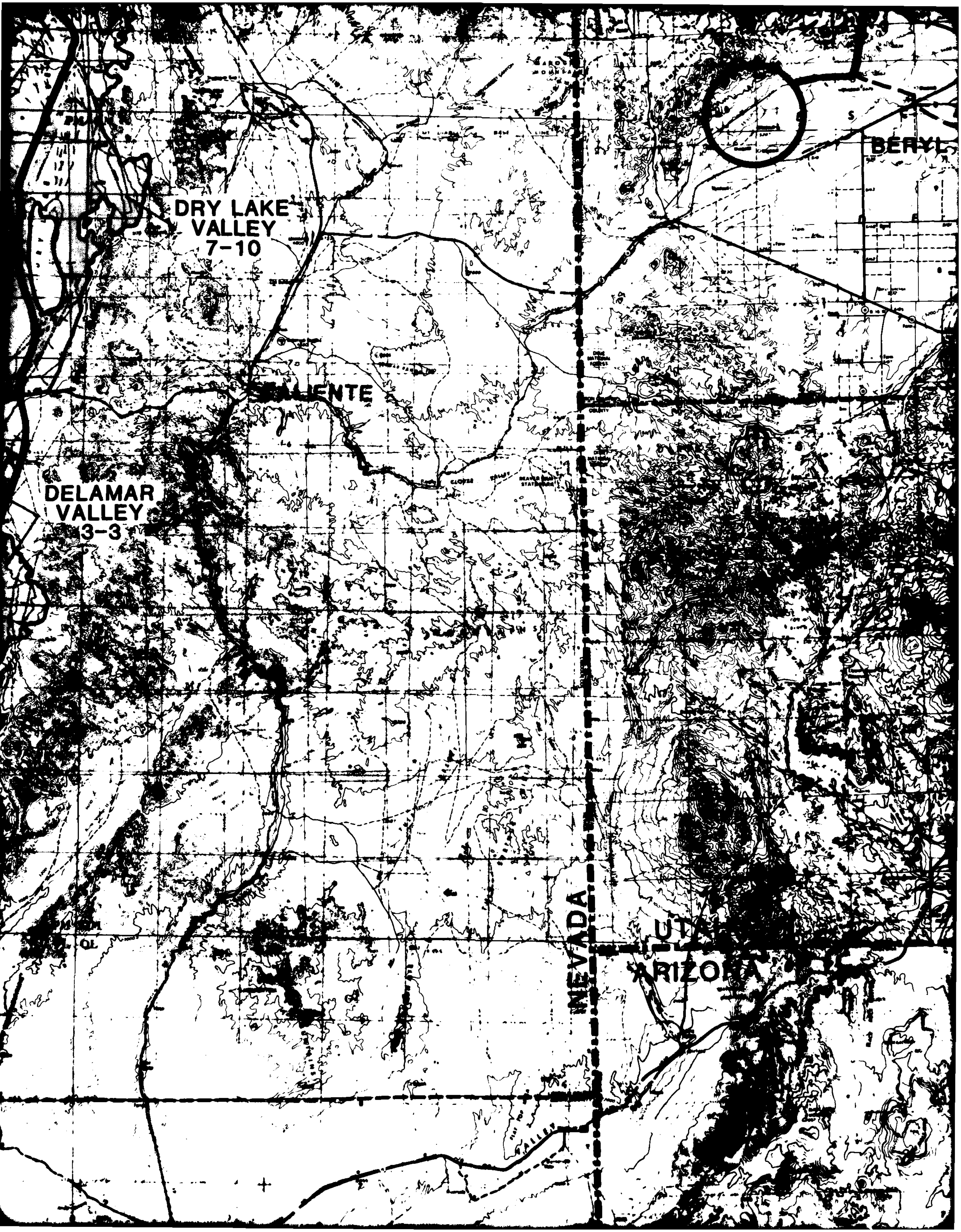

MILFORD


BIG SMOKY
VALLEY
10-10
GOLDFIELD
STONEWALL FLAT
MONO COUNTY
INYO COUNTY

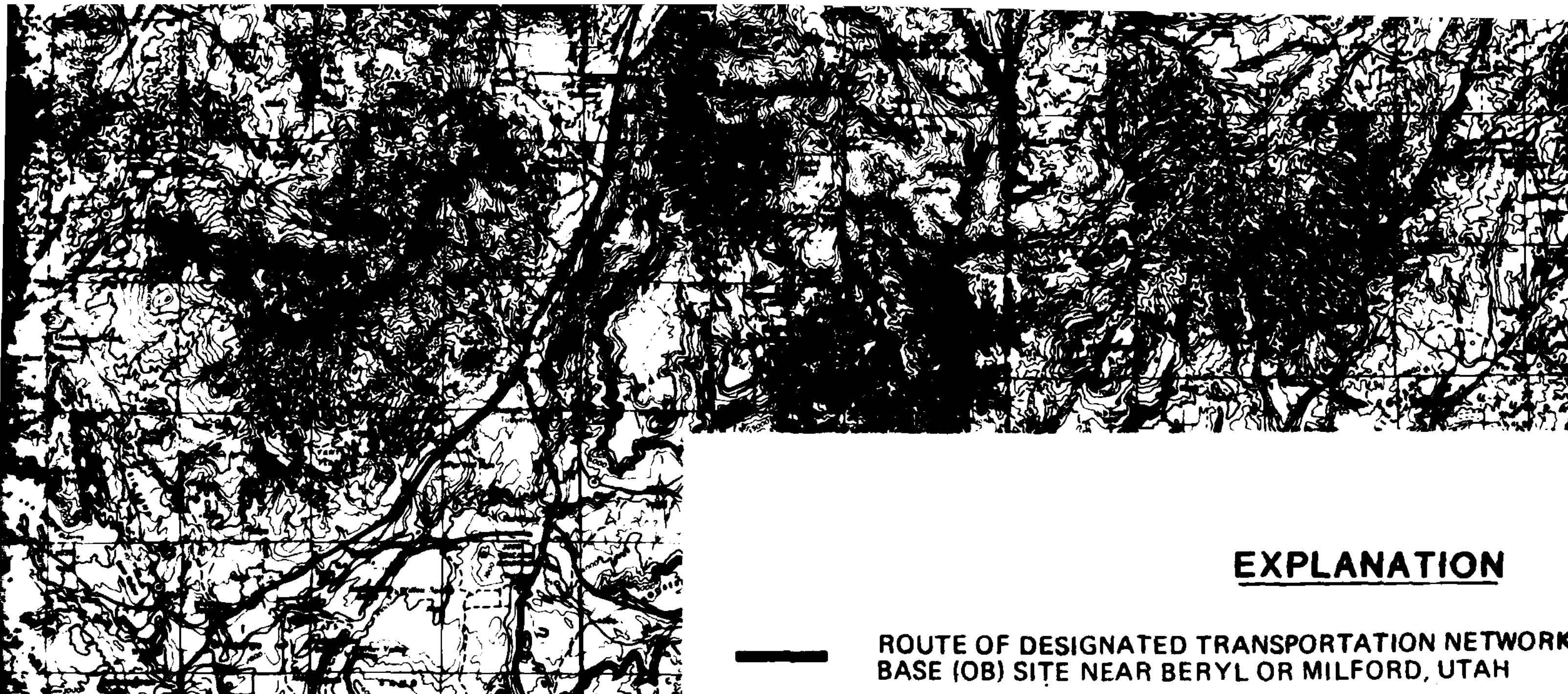

VALLEY
4-3
RAILROAD
VALLEY
NELLIS AIR FORCE RANGE
NELLIS AIR FORCE
RANGE
CACTUS
CACTUS RANGE
GOLD FLAT
SARCOBATUS
SARCOBATUS FLAT
NEVADA
NEVADA TEST SITE
MM NM
ML NL
NM PM
NL PL
MN NN
MM NM



5-6
COAL VALLEY 5-6
PAHROC VALLEY 1-3
PENOYER VALLEY 6-5
DELAM VALLE 3-3
NELLIS AIR FORCE RANGE
NELLIS AIR FORCE RANGE
DESERT GAME RANGE
DESERT GAME RANGE
NM PM
NL PL
DESERT NATIONAL WILDLIFE RANGE
NELLIS AIR FORCE RANGE
COYOTE SPRING VALLEY



DRY LAKE VALLEY 7-10
DELAMAR VALLEY 3-3
CALIENTE
BERYL
NEVADA
UTAH
ARIZONA


EXPLANATION
ROUTE OF DESIGNATED TRANSPORTATION NETWORK
BASE (OB) SITE NEAR BERYL OR MILFORD, UTAH
STEPTOE VALLEY DELETED FROM FURTHER STUDIES
PORTION OF SUITABLE AREA CLUSTERED
AREA SUPPORT CENTER (ASC)
NOTES: 1. CLUSTERED AREAS ARE BASED ON 5200 + 200– FOOT
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CATION FIELD STUDIES STILL IN PROGRESS.

EXPLANATION

ROUTE OF DESIGNATED TRANSPORTATION NETWORK (DTN) FOR OPERATIONAL BASE (OB) SITE NEAR BERYL OR MILFORD, UTAH

STEPTOE VALLEY DELETED FROM FURTHER STUDIES AS OF SEPTEMBER 1980

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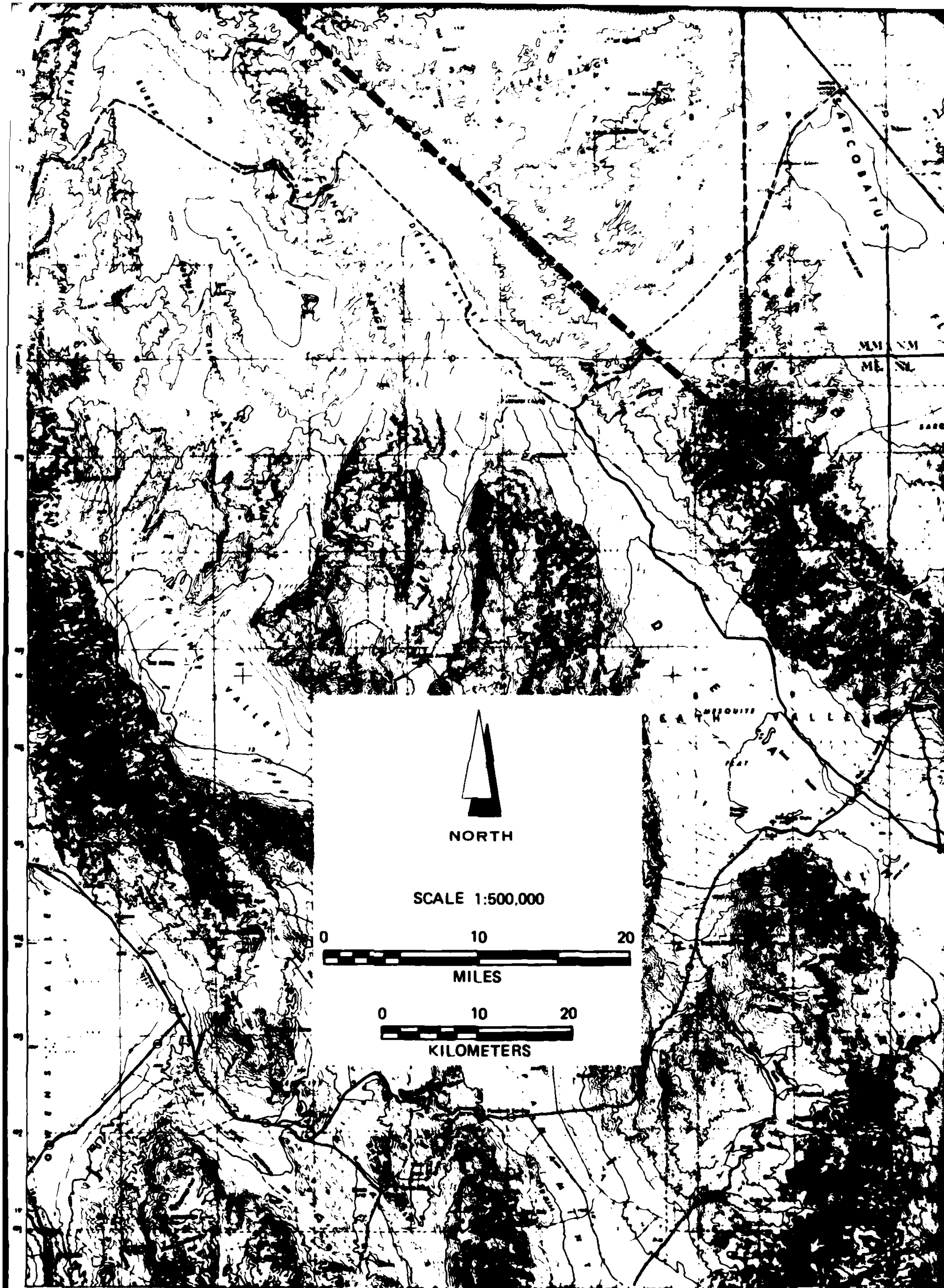
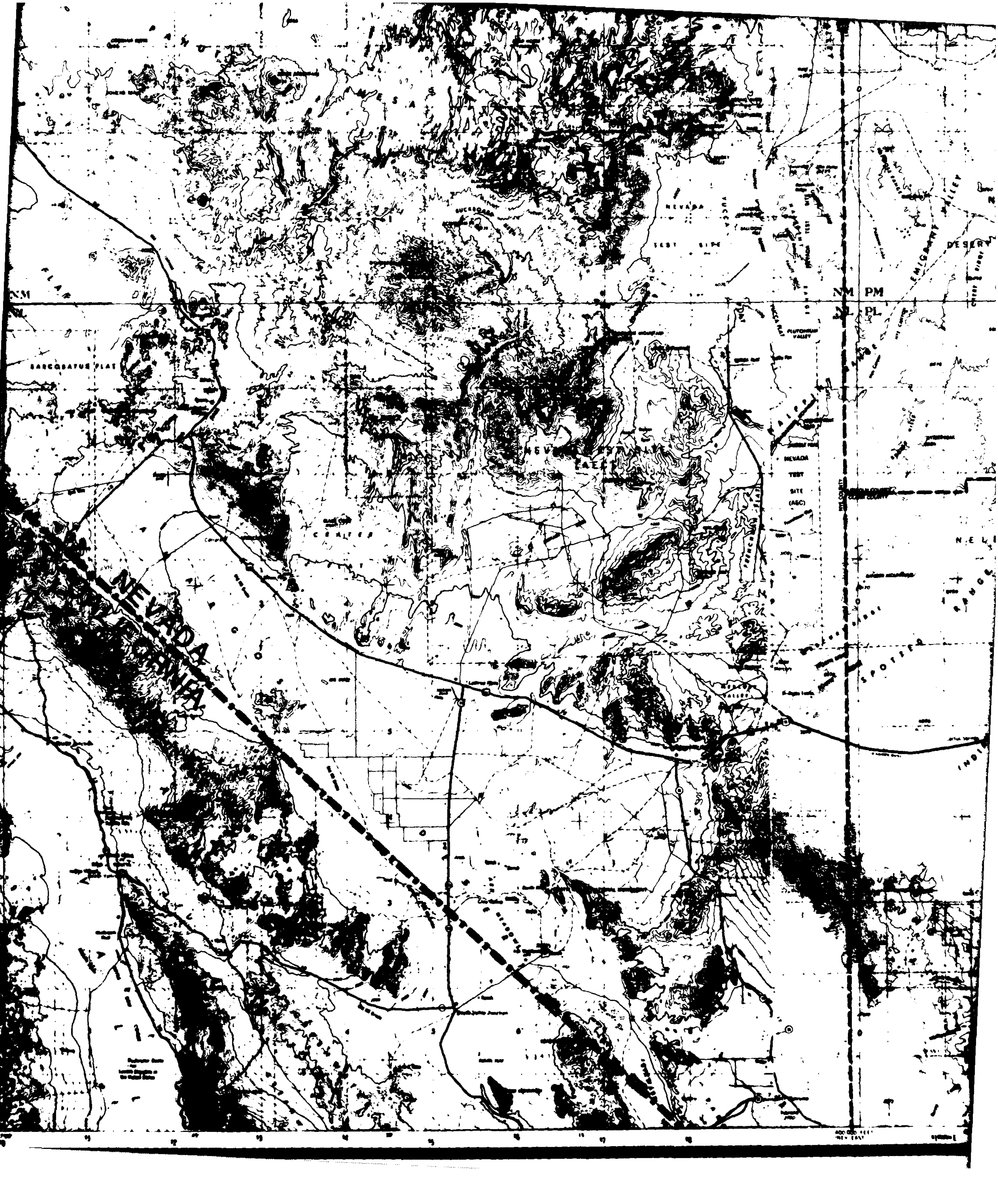
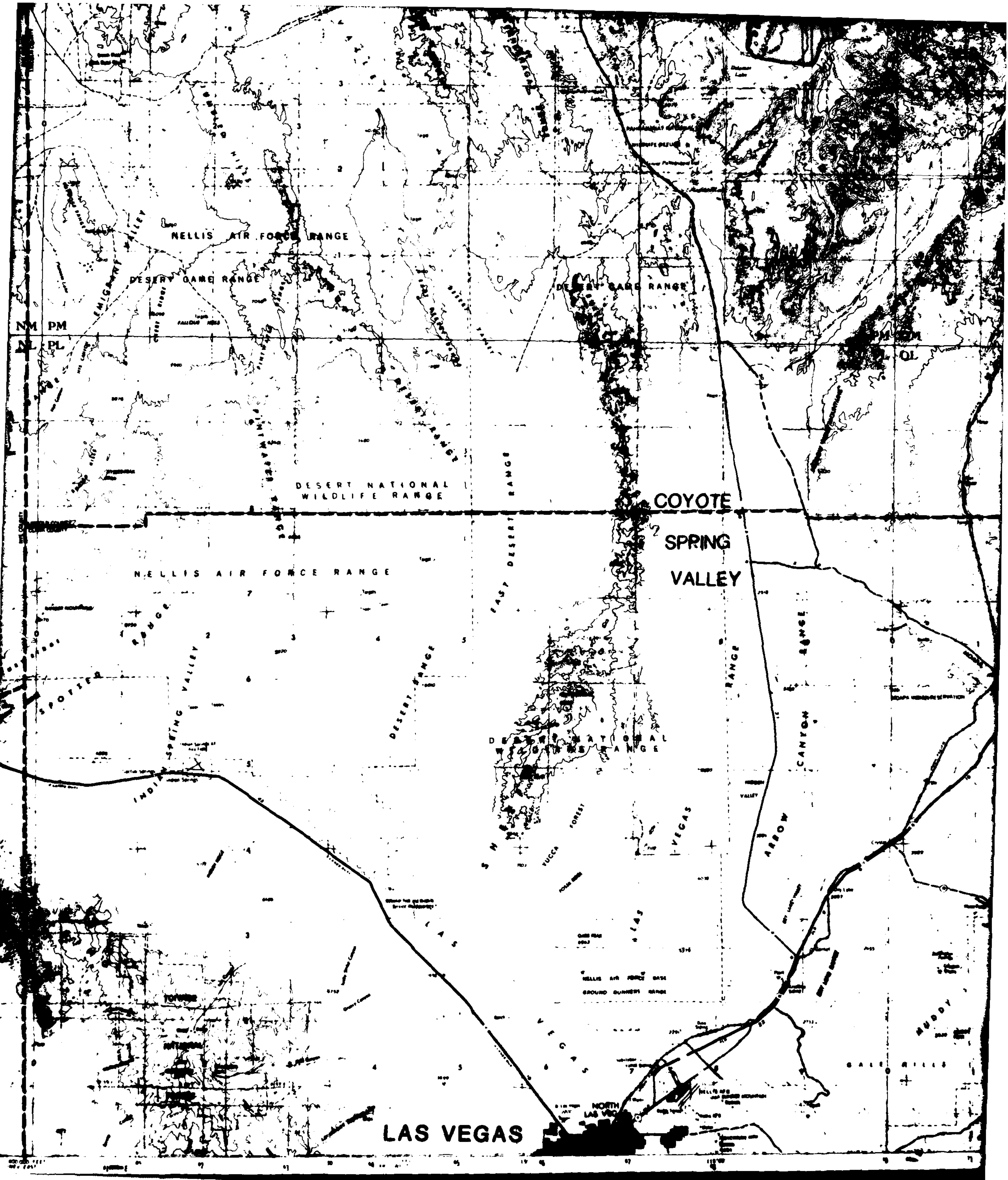
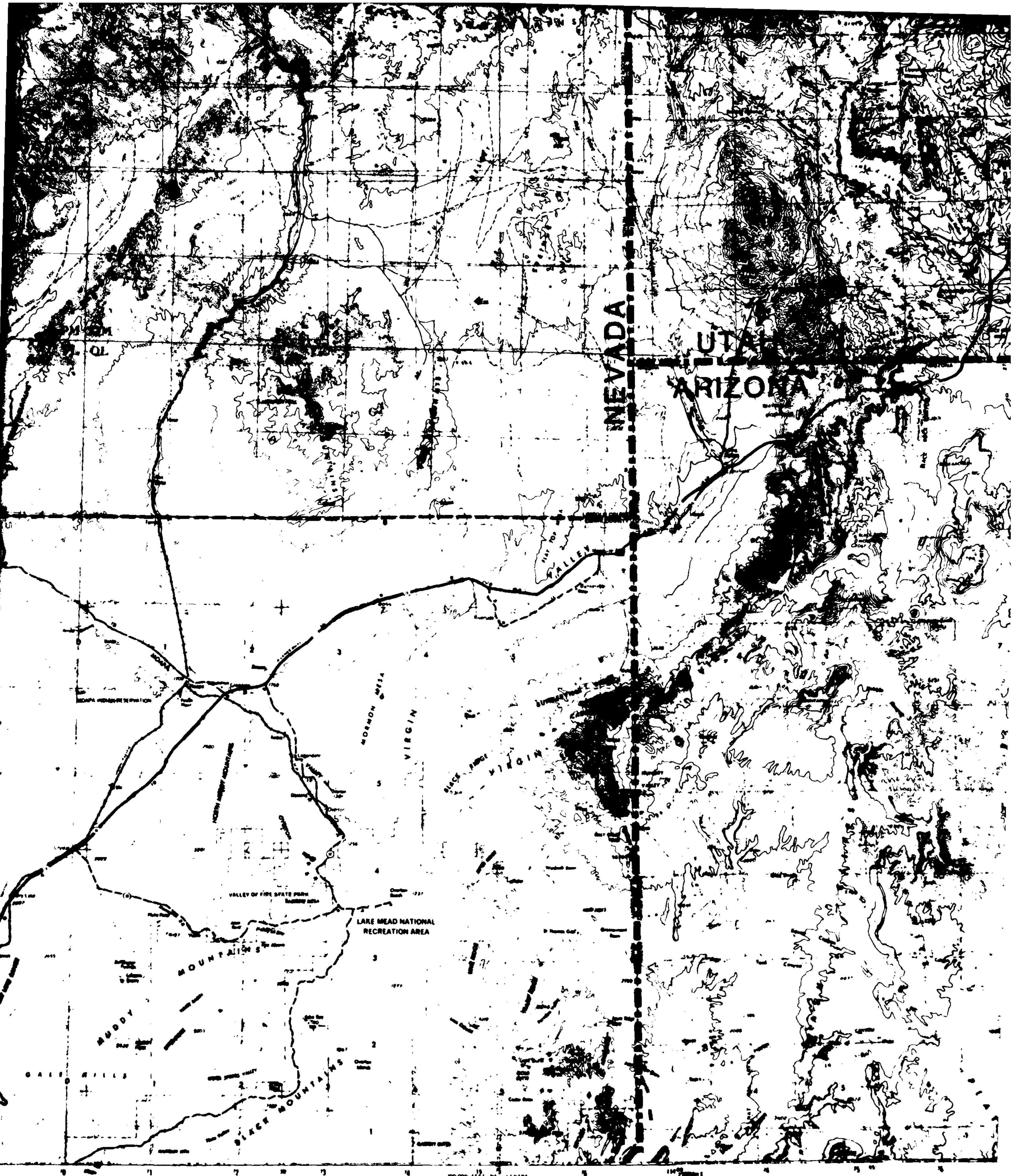


NORTH
SCALE 1:500,000
0
10
20
MILES
0
10
20
KILOMETERS
DEATH VALLEY

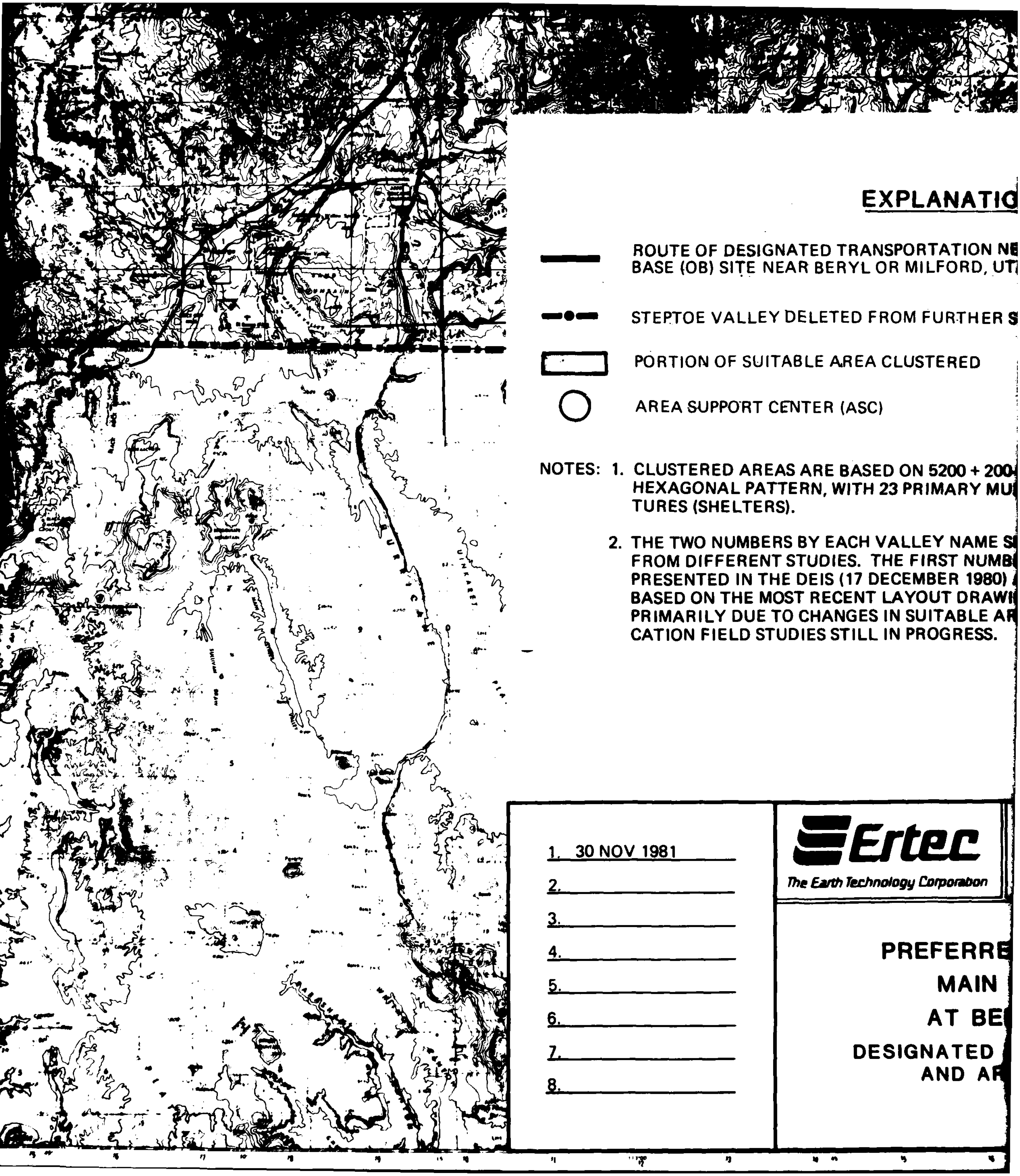

NEVADA
CALIFORNIA
NEVADA TEST SITE
NEVADA TEST SITE (AEC)
SARCOBATUS FLAT
EMIGRANT VALLEY
DESERT
PLUTONIUM VALLEY
NM
NL
PM
PL
SPOTTED
RANGE



NELLIS AIR FORCE RANGE
DESERT GAME RANGE
NM PM
NL PL
DESERT NATIONAL WILDLIFE RANGE
COYOTE
SPRING
VALLEY
NELLIS AIR FORCE RANGE
EAST DESERT RANGE
DESERT RANGE
SPOTTED RANGE
INDIAN SPRING VALLEY
DESERT NATIONAL WILDLIFE RANGE
ARROW CANYON RANGE
LAS VEGAS RANGE
YUCCA FOREST
LAS VEGAS
NELLIS AIR FORCE BASE
GROUND GUNNERY RANGE
NORTH LAS VEGAS
LAS VEGAS
GALE HILLS
MUDDY



NEVADA
ARIZONA
MORMON MESA
VIRGIN
VALLEY OF FIRE STATE PARK
LAKE MEAD NATIONAL
RECREATION AREA
MUDDY MOUNTAINS
BLACK MOUNTAINS



EXPLANATIO

ROUTE OF DESIGNATED TRANSPORTATION NE
BASE (OB) SITE NEAR BERYL OR MILFORD, UT

STEPTOE VALLEY DELETED FROM FURTHER S

PORTION OF SUITABLE AREA CLUSTERED

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FROM DIFFERENT STUDIES. THE FIRST NUMB
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PRIMARILY DUE TO CHANGES IN SUITABLE AR
CATION FIELD STUDIES STILL IN PROGRESS.

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EXPLANATION

ROUTE OF DESIGNATED TRANSPORTATION NETWORK (DTN) FOR OPERATIONAL BASE (OB) SITE NEAR BERYL OR MILFORD, UTAH

STEPTOE VALLEY DELETED FROM FURTHER STUDIES AS OF SEPTEMBER 1980

PORTION OF SUITABLE AREA CLUSTERED

AREA SUPPORT CENTER (ASC)

NOTES:
1. CLUSTERED AREAS ARE BASED ON 5200 + 200– FOOT SPACING, 2/3 FILLED HEXAGONAL PATTERN, WITH 23 PRIMARY MULTIPLE PROTECTIVE STRUCTURES (SHELTERS).
2. THE TWO NUMBERS BY EACH VALLEY NAME SHOW THE RANGE OF CLUSTERS FROM DIFFERENT STUDIES. THE FIRST NUMBER IS THE CLUSTER COUNT PRESENTED IN THE DEIS (17 DECEMBER 1980) AND THE SECOND NUMBER IS BASED ON THE MOST RECENT LAYOUT DRAWINGS. THE DIFFERENCES ARE PRIMARILY DUE TO CHANGES IN SUITABLE AREA RESULTING FROM VERIFICATION FIELD STUDIES STILL IN PROGRESS.

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MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

PREFERRED DTN AND ASC SITES
MAIN OPERATING BASES
AT BERYL/MILFORD, UTAH

DESIGNATED TRANSPORTATION NETWORK
AND AREA SUPPORT CENTERS
NEVADA/UTAH

VOLUME II PART I
DRAWING 7-2

MX SYSTEM SITING
SUMMARY REPORT

VOLUME II, PART II
OBTS/DTA SITING

Prepared for:

U.S. Department of the Air Force
Ballistic Missile Office
Norton Air Force Base, California 92409

Prepared by:

Ertec Western, Inc.
3777 Long Beach Boulevard
Long Beach, California 90807

18 January 1982

Ertec

FOREWORD

This report has been prepared for the U.S. Department of the Air Force, Ballistic Missile Office, in compliance with Contract No. F04704-80-C-0006. It presents the summary of Ertec Western's investigations for siting of facilities and routing of a transportation network for the MX system in Nevada, Utah, and New Mexico. Information, results, and conclusions contained in this report are based on MX siting studies conducted during fiscal years 1980 and 1981. The major part of the study covers 37 deployment valleys and three main operating base sites in Nevada and Utah. Limited studies were also performed in the area surrounding the main operating base site in New Mexico. This report consists of three volumes.

Volume I, Part I

o General Introduction providing brief overviews of the MX system, program schedule, and siting program which includes:

- Introduction
- Summary of MX System Components
- MX Program Schedule Overview
- Siting Program Overview

Volume I, Part II

o Summary discussions of results, conclusions, and recommendations of the Shelter Siting Summary studies of the 37 deployment valleys which includes:

- Introduction
- Siting Requirements
- Siting Methodology
- MPS/HSS Siting Program, Nevada/Utah DDA
- Shelter Siting Program Summary, Conclusions, and Recommendations

Volume II, Part I

o Results and conclusions of the Designated Transportation Network/Area Support Centers (DTN/ASC) siting studies within the MX system study areas which includes:

- Introduction
- Objective and Scope
- Methodology
- Criteria
- Field Reconnaissance and Pass Evaluation
- Evaluation of Optimum DTN Routings and ASC Locations
- Conclusions

Volume II, Part II

o Results and conclusions of the Operational Base Test Site/ Designated Training Area (OBTS/DTA) siting studies near the main operating base sites in Nevada-Utah and New Mexico which includes:

  - Introduction
  - Siting Requirements
  - Methodology
  - OBTS/DTA Siting Evaluation
  - Conclusions

Volume III

o Land Acquisition Application Package Map Sheets depicting the various preferred and alternate facility combinations for land parcel acquisition which includes:

  - Introduction

This report was being prepared prior to the President's decision on 2 October 1981 not to proceed with the MPS MX basing option. It was intended that more detailed valley siting reports would follow this general evaluation. The original objective of the report was to provide interim data to the users of MX siting data until these more detailed evaluations could be produced. As a result of the President's decision, this report represents the final summary of the MX system siting in the MPS basing mode.

It should be noted that at the beginning of FY 81, siting studies were performed under the firm name of Fugro National, Inc. at its Long Beach offices. On 25 March 1981, the corporate name was changed to The Earth Technology Corporation - Ertec. Since that date, the siting studies have been performed at the same offices under the name of Ertec Western, Inc. with support from Ertec Northwest, Inc., Seattle, Washington; Ertec Airborne Systems, Inc., Cypress, California; and Ertec Rocky Mountain, Inc., Denver, Colorado.

LIST OF ACRONYMS

ADT	Average Daily Traffic
AFRCE-MX	Air Force Regional Civil Engineer-MX
AFSC	Air Force System Command
ALCC	Airborne Launch Control Center
AOB	Auxiliary Operating Base
ASC	Area Support Center
BLM	Bureau of Land Management
BMO	Ballistic Missile Office
C^3	Command, Control, and Communication
CBR	California Bearing Ratio
CDP	Candidate Deployment Parcel
CEQ	Council on Environmental Quality
CMF	Cluster Maintenance Facility
COE	U. S. Department of the Army, Corps of Engineers
CONUS	Conterminous United States
CPT	Cone Penetrometer Test
CRN	Cluster Road Network
CSR	Candidate Siting Region
DAA	Designated Assembly Area
DDA	Designated Deployment Area
DEIS	Draft Environmental Impact Statement
DMA	Defense Mapping Agency
DOPAA	Description of Proposed Actions and Alternatives
DTA	Designated Training Area
DTN	Designated Transportation Network
EIS	Environmental Impact Statement
FLPMA	Federal Land Policy Management Act
FNI	Fugro National, Inc.
FSED	Full Scale Engineering Development
FY	Fiscal Year
GBNP	Great Basin National Park
HDR	Henningson, Durham, & Richardson, Inc.
HSS	Horizontal Shelter Site
IOC	Initial Operational Capability
KGRA	Known Geothermal Resources Area
MF	Medium Frequency
MMC	Martin Marietta Company
MOA	Military Overflight Area
MOB	Main Operating Base
MPS	Multiple Protective Structure
MPT	Mobile Patrol Teams
NCA	National Control Authorities
NEPA	National Environmental Policy Act
NH&S	Nuclear Hardness and Survivability
OB	Operational Base
OBTS	Operational Base Test Site

OSR	Operational Support Road
PLU	Preservation of Location Uncertainty
PMOA	Programmetric Memorandum of Agreement
POL	Petroleum, Oils, and Lubricants
PS	Protective Structure
QA	Quality Assurance
QD	Quantity Distance
R&D	Research and Development
REPR	Real Estate Planning Report
RES	Renewable Energy Sources
RMP	Ralph M. Parsons Company
ROW	Right-of-way
RSS	Remote Surveillance Site
SAC	Strategic Air Command
SALT	Strategic Arms Limitation Talks
SHPO	State Historic Preservation Officer
STV	Special Transport Vehicle
T&E	Threatened and Endangered
TEL	Transporter and Erector Launcher
TI	Technical Interchange
TSB	Test Support Building
USGS	United States Geological Survey
USPLS	United States Public Land Survey
UTM	Universal Transverse Mercator
V&H	Vulnerability and Hardness

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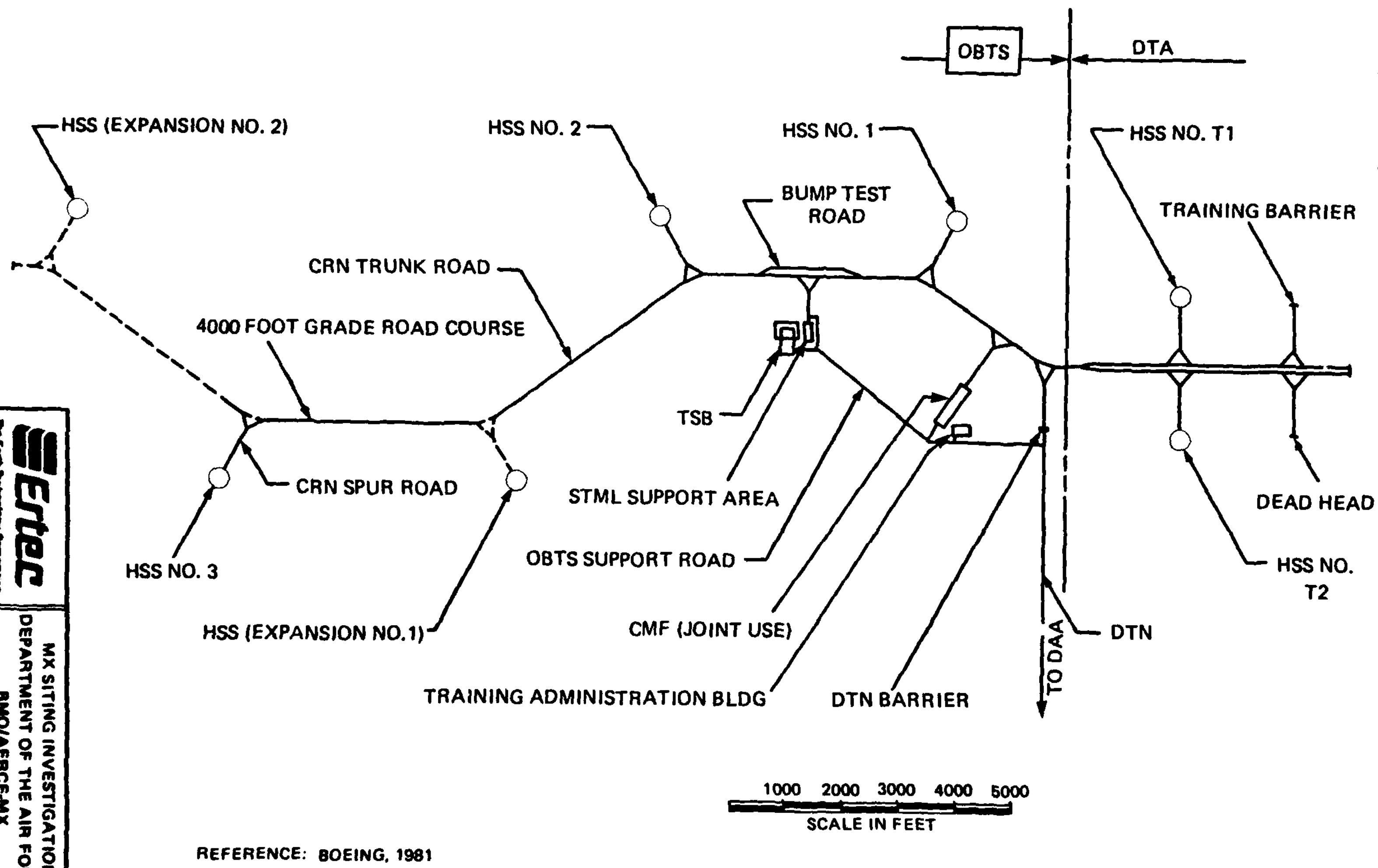
1.0 INTRODUCTION

This report presents the results and documentation of the studies performed by the Operational Base Test Site/Designated Training Area (OBTS/DTA) working group on the preliminary siting and conceptual layout of the OBTS/DTA in the Nevada-Utah and New Mexico study areas.

The OBTS/DTA provides a centralized location to perform numerous tests, evaluations, and training activities in support of the MX weapon system development. These activities occur prior to, during, and after deployment area construction. To support these various time periods, the OBTS/DTA is designed as a "phased build up" facility. Over the life of the system, this facility supports 1) operational system development tests, 2) processing tests, 3) operational system integration tests, 4) operational weapon system tests, 5) follow-on weapon system development test and evaluation, as well as, 6) the training activities to be carried out in the Designated Training Area (DTA).

The OBTS facilities (Figure 1-1) are intended to be representative of a portion of the present cluster basing mode (Figure 1-2) to be built in the Designated Deployment Area (DDA). All operational design requirements are to be retained for both the location and the configuration of the facilities. The components of the OBTS are: 1) two to five Horizontal Shelter Sites (HSSs) spaced 5200 feet (1585 m) apart, 2) a Cluster Maintenance Facility (CMF), 3) a test support building and 4) a



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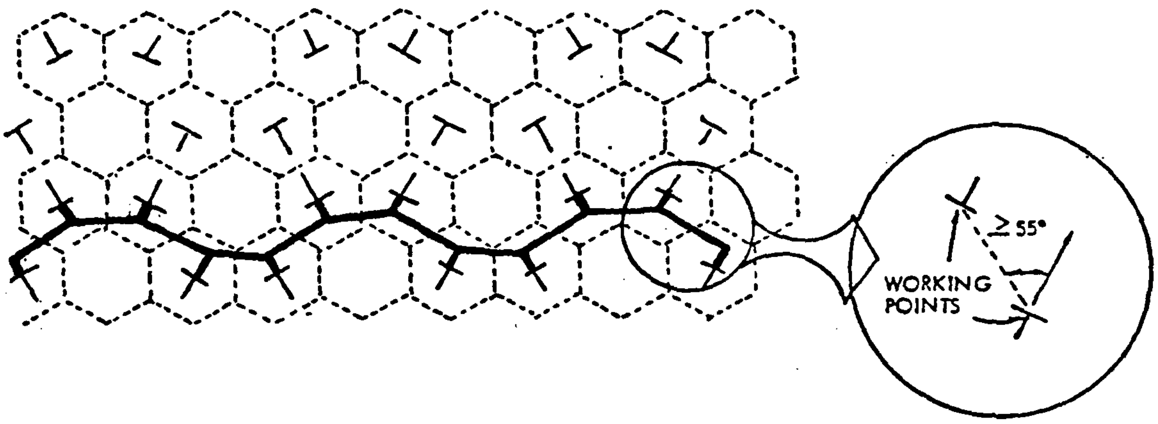
CONCEPTUAL OBTS/DTA BASELINE LAYOUT FOR OPEN LAND

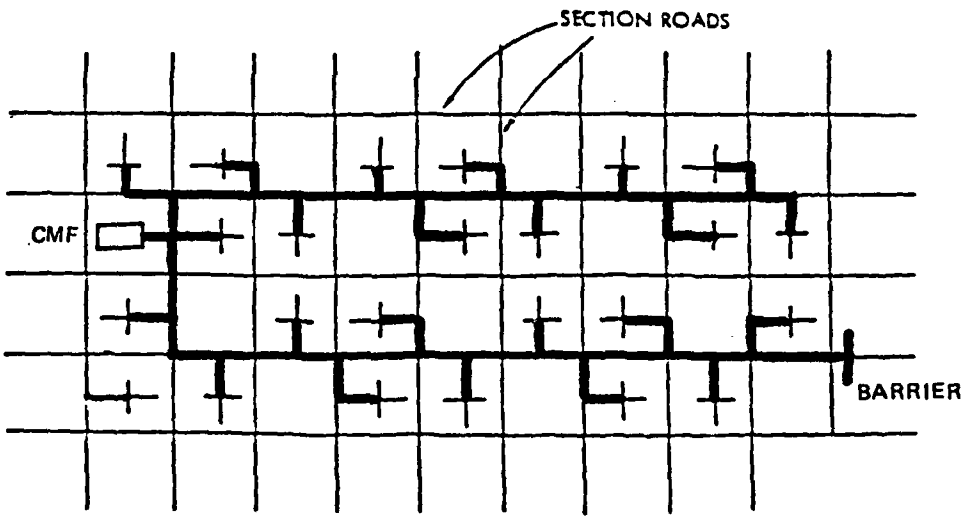
OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81

FIGURE 1-1



LAYOUT AND BEARING (OPEN LAND)



LAYOUT AND BEARING (SECTIONED LAND)

REFERENCE:

UNITED STATES DEPARTMENT OF THE AIR FORCE, 1980

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OPEN LAND VS SECTIONED LAND BASING OPTION LAYOUTS

OPERATIONAL BASE TEST SITE AND DESIGNATED TRAINING AREAS

30 NOV 81

FIGURE 1-2

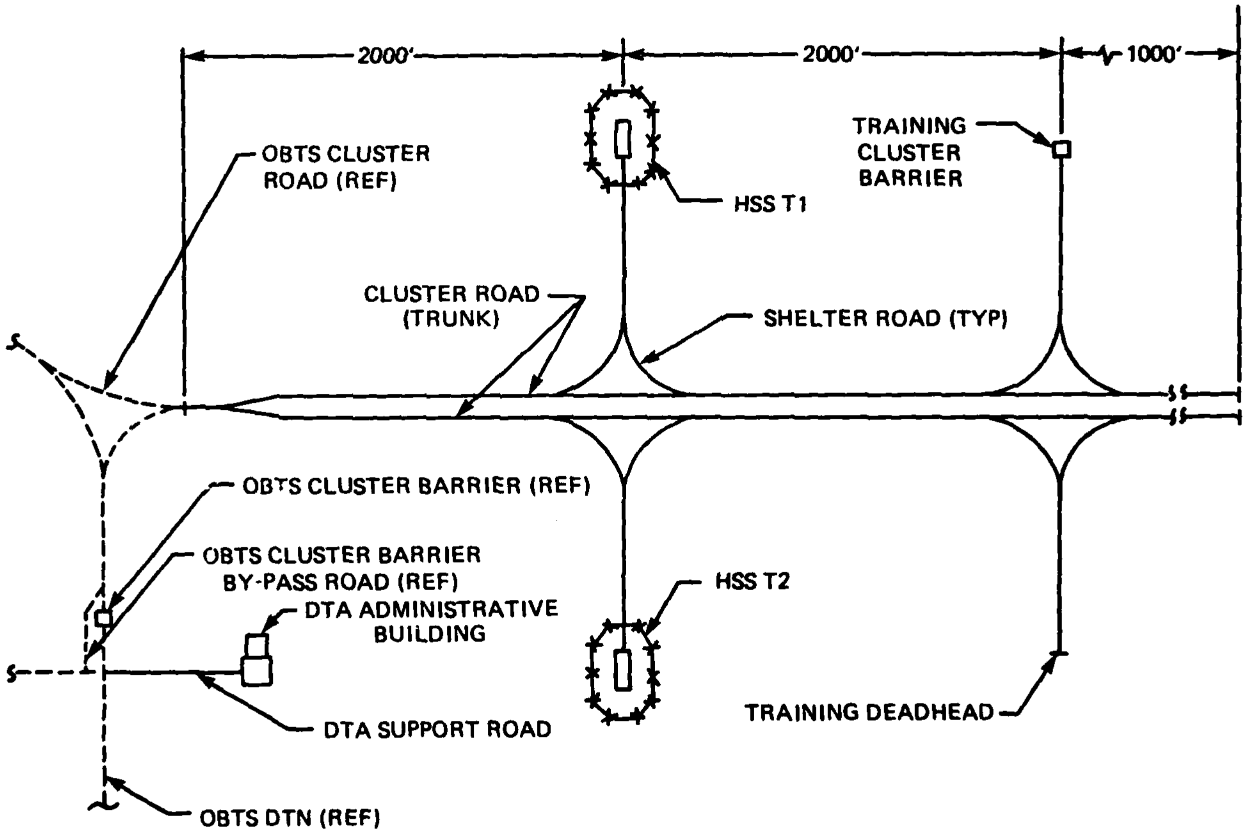
series of connector roads between the HSSs to provide vehicle test roads. The DTA facility (Figure 1-3) provides training to personnel on the use of the system and its equipment. The facilities consist of two HSS mock-ups, a barrier, and a deadhead used for turn-around practice. The CMF supports both the OBTS and the DTA.

This section includes a brief description of the study area and a review of previous studies. Sections 2.0 and 3.0 summarize the overall siting process in terms of the objectives, scope of the study, and the siting requirements used, as well as the methodology for site selection and production of conceptual layouts. The OBTS/DTA area siting layout development and preferred/alternate site evaluation results are presented in Section 4.0. Section 5.0 contains conclusions based on the preferred and alternate OBTS/DTA sites developed.

1.1 STUDY AREA

The study area for the OBTS/DTA (Figures 1-4 and 1-5) is restricted to an area in close proximity to the MOB options. The MOB options are: 1) Coyote Spring, Nevada; 2) Beryl, and 3) Milford, Utah; and 4) Cannon Air Force Base (AFB), New Mexico. The Nevada-Utah MOBs are located to the south and southeast, respectively, of the DDA. The New Mexico MOB is 8 miles (12.8 km) west of Clovis, New Mexico, encircled by the DDA.

The outer limits of the study area were defined by an approximate 50-mile (80.4-km) radius around each of the Nevada/Utah



EXPLANATION

—— DTA FACILITIES
- - - OBTS FACILITIES

REFERENCE: BOEING, 1981

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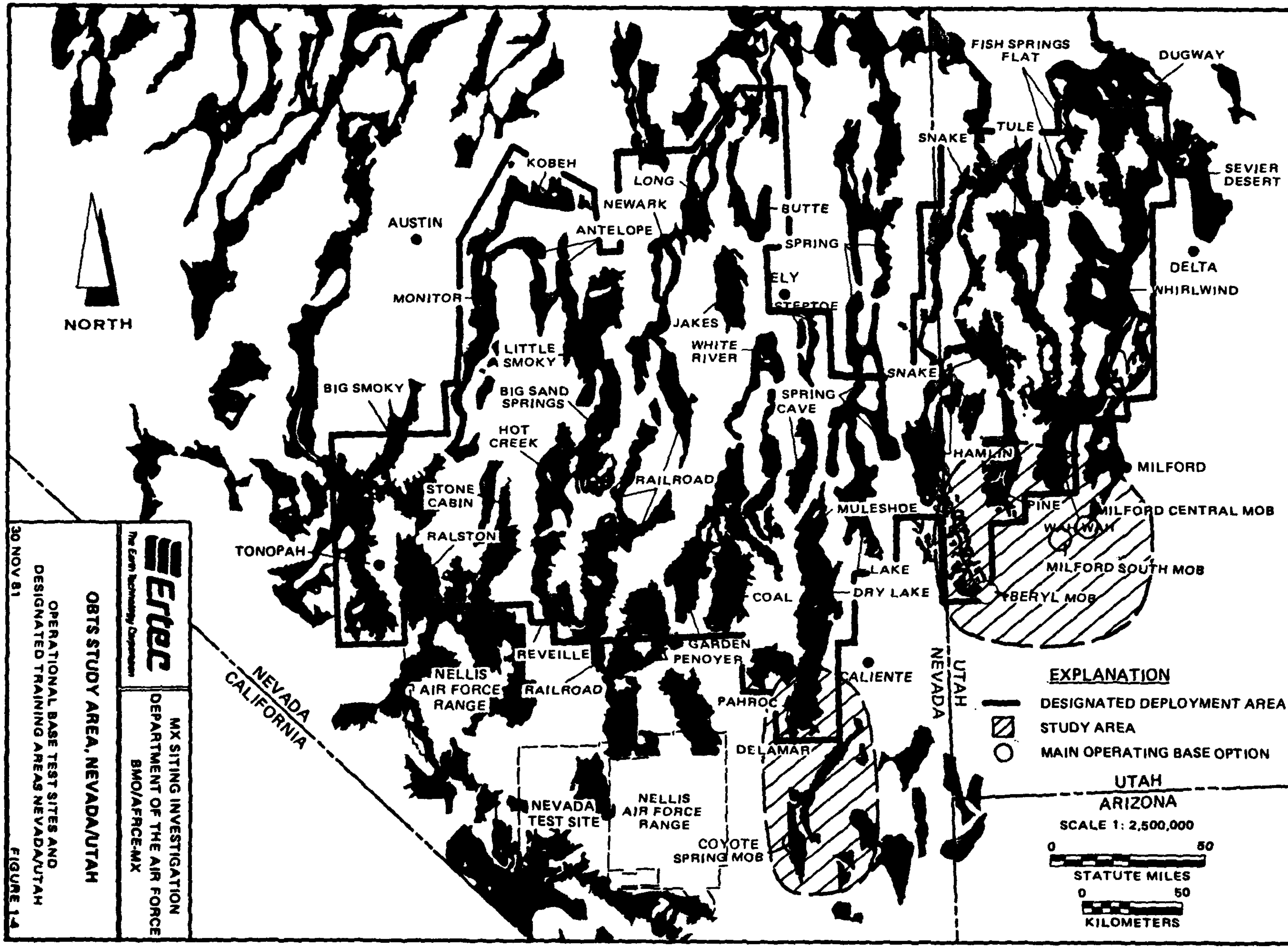
CONCEPTUAL DTA BASELINE LAYOUT FOR OPEN LAND

OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81

FIGURE 1-3



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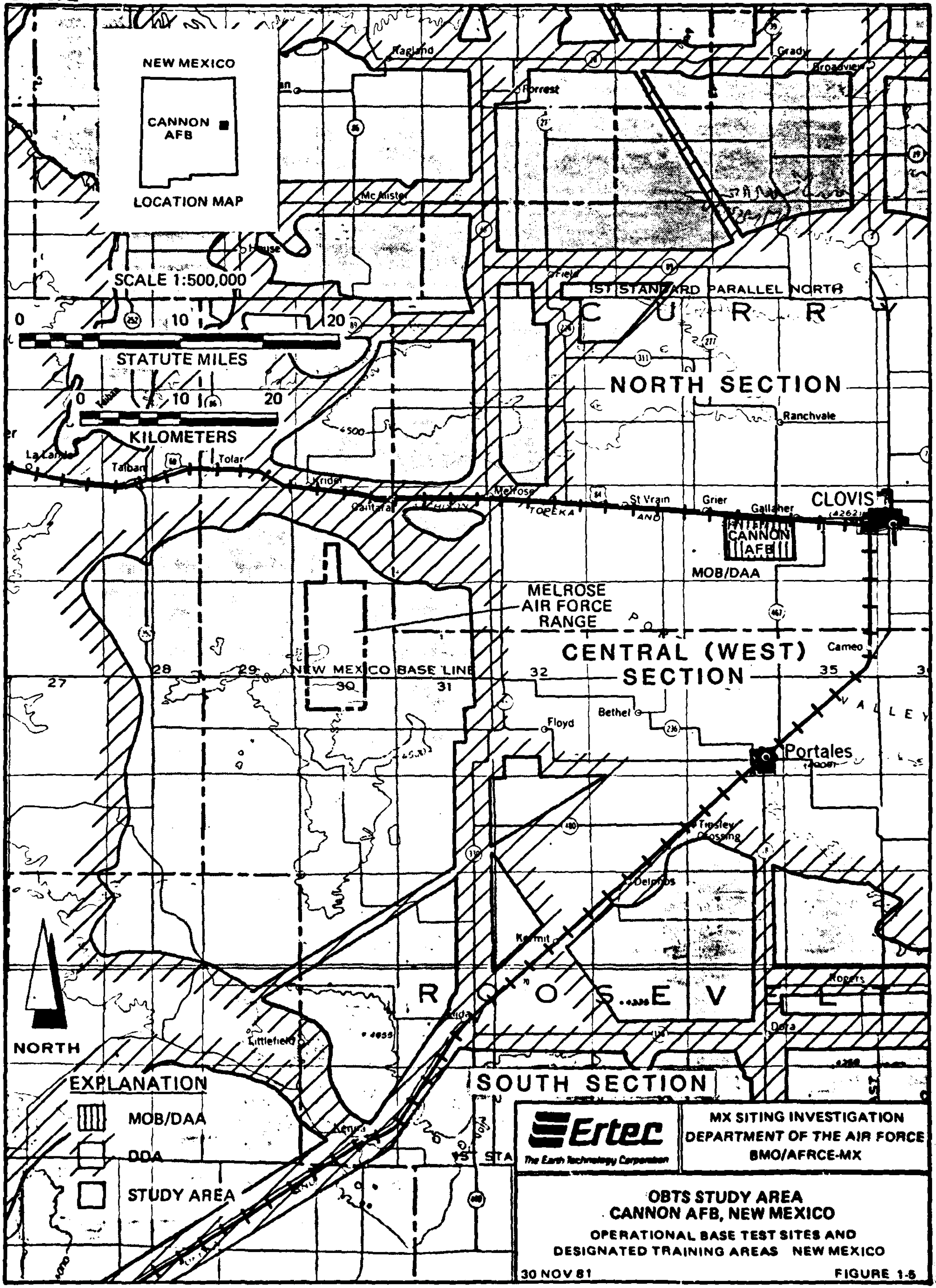
OBTS STUDY AREA, NEVADA/UTAH

OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81

FIGURE 1-4


NEW MEXICO
CANNON AFB
LOCATION MAP
SCALE 1:500,000
0 10 20
STATUTE MILES
0 10 20
KILOMETERS
NORTH
EXPLANATION
MOB/DAA
DDA
STUDY AREA
CURRY
NORTH SECTION
1ST STANDARD PARALLEL NORTH
CENTRAL (WEST) SECTION
NEW MEXICO BASE LINE
MELROSE AIR FORCE RANGE
CANNON AFB
MOB/DAA
CLOVIS
Portales
ROOSEVELT
SOUTH SECTION
VALLEY
Ragland
Forrest
Grady
Broadview
McAlister
House
Field
Ranchvale
La Lande
Taiban
Tolar
Krider
Melrose
St Vrain
Grier
Gallaher
Cameo
Floyd
Bethel
Tinsley Crossing
Delphos
Kermit
Elida
Littlefield
Kenna
Rogers
Dora
TOPEKA
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OBTS STUDY AREA
CANNON AFB, NEW MEXICO
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEW MEXICO
30 NOV 81
FIGURE 1-5

MOB options. This radius was selected to ensure that the closest DDA valleys would be included in the study (i.e., Delamar, Pine, and Wah Wah). The limit of the New Mexico study area was defined by a 60- to 80-mile (97- to 129-km) radius around Cannon AFB in New Mexico only. This radius is larger than that used in Nevada-Utah to ensure sufficient land was available to select a preferred IOC site prior to OBTS/DTA site selection.

1.2 BACKGROUND

Initial siting studies for the Operational Base (OB) complex were performed from December through June, Fiscal Year 1980 (FY 80) (Fugro National, Inc., 1980a). As part of each OB complex option, OBTS conceptual layouts were prepared. The sites selected were reevaluated by the AFRCE-MX formed OB working group beginning in July 1980. This group coordinated OB complex evaluations and developed preliminary OB area layouts prior to the availability of an OB comprehensive planner. Detailed facility layouts within the complex areas were not attempted. The results of these activities were presented on maps dated 20 August 1980.

In October and November 1980, field investigations and surveys of three of the OB complex areas were performed (Fugro National, Inc., 1980b, 1981a, b, and c). These studies were limited to preliminary geotechnical and environmental evaluations of the Coyote Spring, Nevada, and Beryl and Milford, Utah, OB complex areas. Field studies confirmed the suitability of the

selected sites as acceptable OB and OBTS areas. No field studies were performed in New Mexico.

1.3 OBJECTIVES

The objectives of this study were:

- Coordinate activities at the OBTS/DTA working group;
- Assist the Air Force and other members of the working group in development of siting criteria;
- Evaluate all existing data to determine potential sites for the OBTS/DTA for each MOB option;
- Prepare 1:62,500 scale maps showing preferred and alternate OBTS/DTA sites and submit these drawings to the Air Force for review;
- Perform field surveys to determine geotechnical suitability and to obtain data needed for an environmental assessment; and
- Prepare layout drawings and parcel descriptions for inclusion in the land acquisition application package.

2.0 SITING REQUIREMENTS

The siting requirements for OBTS/DTA site selection and layout development were initially developed at the 22 April 1981 (U.S. Department of the Air Force, BMO/AFRCE-MX, 1981a) meeting (Table 2-1). These requirements were developed to support the initial siting studies until more formalized requirements were available. A major element of these requirements was the standoff distances. Initially, it was established that the separation of the OBTS from other facilities and corridors would range from 6 to 10 miles (10 to 16 km), with 10 miles (16 km) being the preferred. With the formalization of the requirements by the BMO/AFRCE-MX on 27 May 1981 (Tables 2-2 through 2-4) it was determined that a distance of 4 miles (6 km) is acceptable, and that the need for lesser separation distances would be evaluated on a site-specific basis (U.S. Department of the Air Force, BMO/AFRCE-MX, 1981b). Modifications to the requirements were made on 14 August 1981 (U.S. Department of the Air Force, BMO/AFRCE-MX, 1981c). It was established that the area of "No Public Use," which originally applied to all shelters and roads, would only pertain to shelters 1 and 2 and their connecting cluster road.

These requirements were also applied to the OBTS/DTA siting activities in New Mexico. Modifications to the operational requirements occur when the sectioned land shelter basing layout option is used rather than the open land basing layout option used in Nevada/Utah.

GENERAL

- 8 miles from OB (DDA)
- 10 miles from airfields, railroads, major highways, DTN
- 5 miles from power lines, gas lines
- Elongated shape, 6-square mile area expansion potential
- One shelter to face magnetic west
- Minimize driving distance from OB
- Within OB siting vicinity zone or EIS boundary

GEOTECHNICAL

- Avoid surface rock and rock within 50 feet
- Avoid surface water and water within 50 feet
- Less than five percent grade
- Avoid adverse terrain and major drainage

CULTURAL

- Avoid EIS exclusions and environmentally sensitive areas
- Avoid high potential mineral areas
- Minimize impact on ranching

Note:
All shelter operational siting requirements (E-TR-58-I)
are applicable unless modified above

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OBTS AND DTA
22 APRIL 81 SITING REQUIREMENTS
OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81 TABLE 2-1

OPERATIONAL

- 4 mile separation (from shelter centerline to)
  - OB/DAA
  - Airfields
  - Railroads
  - Major highways or major service road
  - DTN
  - Power lines greater than 250 kV
  - Mining or processing plants
- One mile separation from pipelines
- Approximately 3000 feet of cluster road network with average of three percent grade with a maximum of five percent grade for not more than 5000 feet
- One shelter to face magnetic west
- The DTA shall be sited adjacent to the OBTS but outside the "No Public Use" area
- Locate within OB siting vicinity zone and/or EIS boundary
- The "No Public Use" area is the zone 1 mile from the centerline of each OBTS shelter, the CMF, and the cluster road
- Minimize driving distance from OB/DAA
- An additional area 0.9 to 1.5 miles outside the "No Public Use" area would allow all public use on a noninterference basis

Note:
All shelter operational siting requirements (E-TR-58-II) are applicable unless modified above.

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OBTS AND DTA
OPERATIONAL REQUIREMENTS
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81 TABLE 2-2

GEOTECHNICAL

I. EXCLUSIONS:

- Outcropping or shallow rock
- Surface slope greater than 10 percent
- Adverse terrain (two or more drainages 10 feet deep within 1000 feet)
- Standing water, swamps, or perennial streams
- Depth to rock less than 50 feet (i.e., material with a seismic velocity of 7000 fps)
- Depth to water less than 50 feet (i.e., first encountered water)
- Active playas

II. CONSIDERATIONS:

- Fault rupture hazard
- Potential sheet wash
- Surface slope greater than five percent
- Dunes
- Desiccation cracks
- Tufa
- Boulder fields

ENVIRONMENTAL

I. EXCLUSIONS:

- Designated wilderness areas
- Wilderness study areas
- Existing/proposed federal and state
  - Wildlife refuges, archaeological areas
- Existing/proposed national
  - Wildlife refuges, preserves, registered archaeological properties
- Federal threatened and endangered species
- Non-attainment air quality areas

II. CONSIDERATIONS:

- Federal and state proposed threatened and endangered species
- Locally identified "sensitive" areas
  - Environmental
  - Socio-Economical
- Visual Resources

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OBTS AND DTA
GEOTECHNICAL/ENVIRONMENTAL
REQUIREMENTS

OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81 TABLE 2-3

GEOGRAPHICAL

I EXCLUSIONS:

- Existing/proposed federal and state:
  - Parks, landmarks, refuges, monuments, forests, recreational areas
- Existing/proposed national:
  - Grasslands, Indian reservations, ranges, military ranges (training areas, proving grounds, test site), registered historic properties
- Radii from population centers:
  - 20 statute miles from cities of 25,000 or more
  - 3.5 statute miles from cities of 5000 to 25,000
  - 1 statute mile from cities of less than 5000
- Inhabited buildings
- Industrial complexes:
  - Active mining areas, tank farms, pipeline complexes
- "High" potential mineral areas: *
  - Oil and gas fields, active and potentially active mining areas, strippable coal, oil shale, uranium deposits, known geothermal resource areas
- COE recommended exclusions

II CONSIDERATIONS:

- Private property
- State property
- "Good" potential mineral areas: *
  - Oil and gas, active and potentially active mining areas, strippable coal, oil shale, uranium deposits, known geothermal resource areas
- Irrigated farmland
- Prime agricultural land
- Moapa Indian Expansion Area
- Duckwater Indian Expansion Area
- Ranch and grazing allotments
- Existing access roads
- Proposed utility corridors

* Mineral potential to be determined by a study as required by FLPMA

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OBTS AND DTA
GEOGRAPHICAL REQUIREMENTS
OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81 TABLE 2-4

3.0 METHODOLOGY

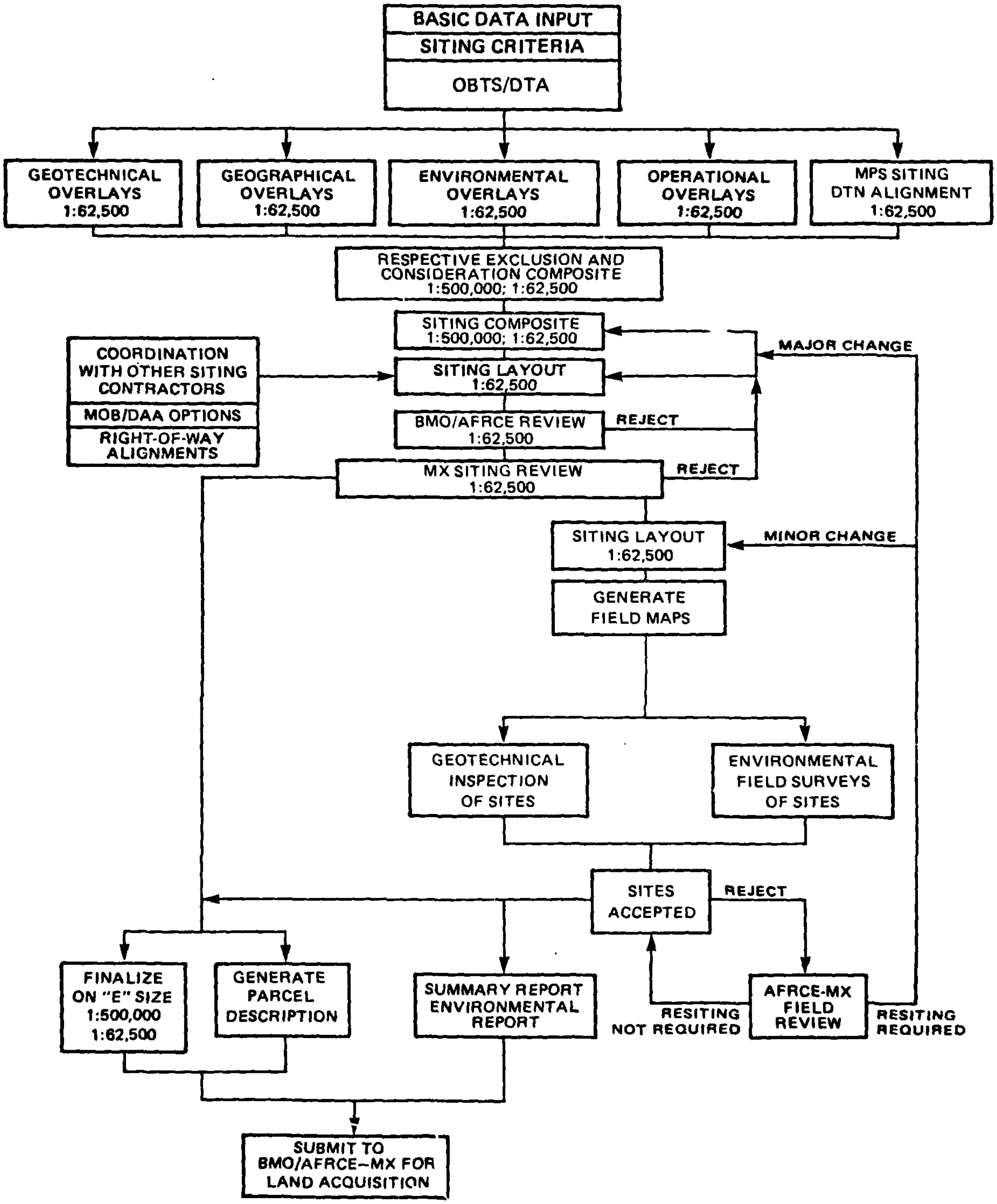
In April 1981, the OBTS/DTA working group was formed by the AFRCE-MX from members of the DTN working group and others. The members of the OBTS/DTA working group are as follows.

1.	Ballistic Missile Office	(BMO)
2.	Air Force Regional Civil Engineer-MX	(AFRCE-MX)
3.	TRW	(TRW)
4.	Ertec Western, Inc.	(Ertec)
5.	Boeing Aerospace Company	(Boeing)
6.	Martin Marietta Corporation	(MMC)
7.	Ralph M. Parsons Company	(RMP)
8.	Henningson, Durham & Richardson, Inc.	(HDR)
9.	U.S. Army, Corps of Engineers	(COE)

Ertec, as the siting contractor, performed the task of group coordinator as well as OBTS/DTA site integrator. The siting decisions reached by the group were integrated with the base comprehensive planner for the ongoing MOB siting studies. The initial activities of the OBTS/DTA working group were focused on defining the siting requirements described in Section 2.0 and reviewing the previous studies.

The methodology used in siting the OBTS/DTA is diagrammed in the flow chart in Figure 3-1. The process depicted in this chart includes the following major activities:

- o Collect and synthesize geotechnical, geographical, environmental, and operational data;
- o Establish boundaries for the areas which are suitable for siting the OBTS;
- o Produce conceptual layouts of the OBTS/DTA facilities and those Designated Transportation Network (DTN) and service roads necessary to connect the OBTS/DTA to the Main Operating Base/Designated Assembly Area (MOB/DAA);
- o Perform field reconnaissance of the OBTS/DTA sites and associated DTN alignments;



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METHODOLOGY FLOW CHART
OBTS/DTA LAYOUT
SITE-SELECTION PROCESS
OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS

30 NOV 81 FIGURE 3-1

- Support field surveys of the OBTS/DTA locations and the DTN from the MOB/DAA to the OBTS/DTA;
- Provide preferred and alternate site locations and layouts for each MOB option to the environmental assessment contractor in support of the tiered decision-making process; and
- Prepare maps showing site locations and produce parcel descriptions for preferred and alternate OBTS/DTA sites for each MOB option in support of the land acquisition application.

3.1 DEFINING THE SITING AREA

A common process was used to define the areas suitable for siting the OBTS at each of the MOB locations. All known data were depicted on a series of topical exclusionary overlays using a topographic map as a base. The topics of these overlays are operational, geotechnical, environmental, and geographical. The overlays, with their exclusion and consideration data, were composited to form "windows" of suitability (i.e., that area not excluded) or siting areas.

The initial evaluations of the Nevada-Utah study areas were performed at a regional scale of 1:500,000. Those siting requirements depictable at this scale were applied and the regional siting areas were determined. The regional siting areas developed for each MOB option were then reexamined at the site-specific scale of 1:62,500. At this scale, all siting requirements were applied and the exact limits of the siting area were determined.

In the New Mexico study area, the initial activity was to site a preferred IOC location and its supporting DTN route from the

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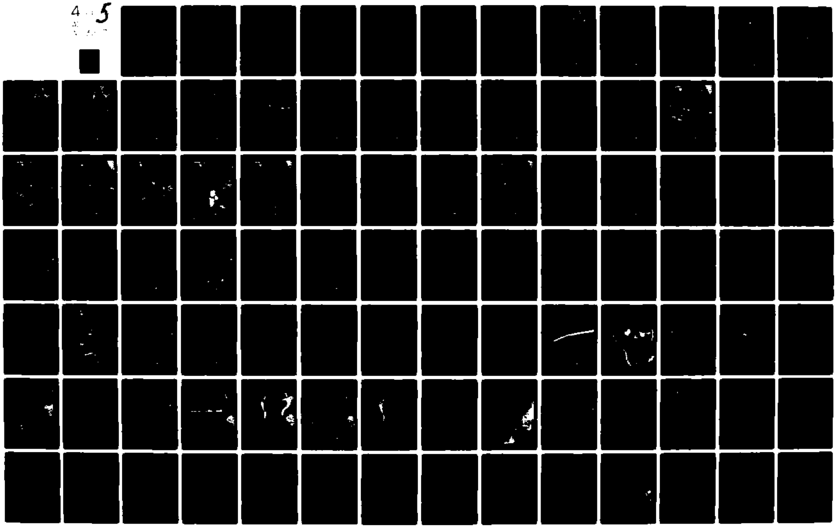

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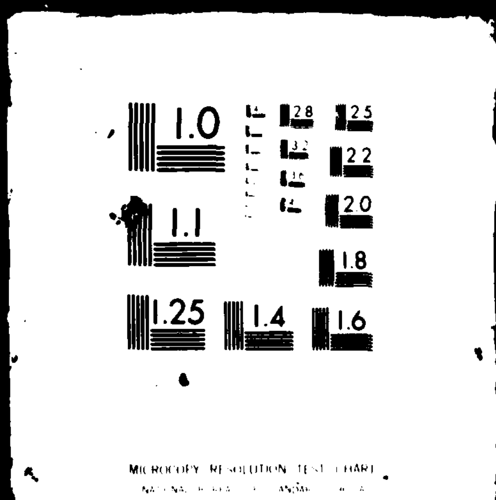


MOB. The selection of an IOC site was necessary so that the OBTS/DTA did not preclude the use of a prime area for the IOC and to enable depicting the DTN standoff corridors as specified in the siting requirements. The IOC area should be the most accessible suitable area to the MOB/DAA and possess the minimum cultural and environmental impacts.

3.2 DEVELOPING CONCEPTUAL LAYOUTS

Conceptual OBTS/DTA layouts were produced within the site-specific suitable areas sited for each MOB option. These layouts were based on the baseline conceptual layouts (Figures 1-1, 1-3, and 3-2) provided by BMO/AFRCE-MX and altered to best fit the physical characteristics of the siting area. Prior to developing site-specific suitable areas in which to perform layouts, a rectangular shaped box approximately 6 mi^2 (16 km^2), was used to represent the area of the layout. When the DTA was included, an additional 1 mi^2 (3 km^2) was added at one end of the rectangle.

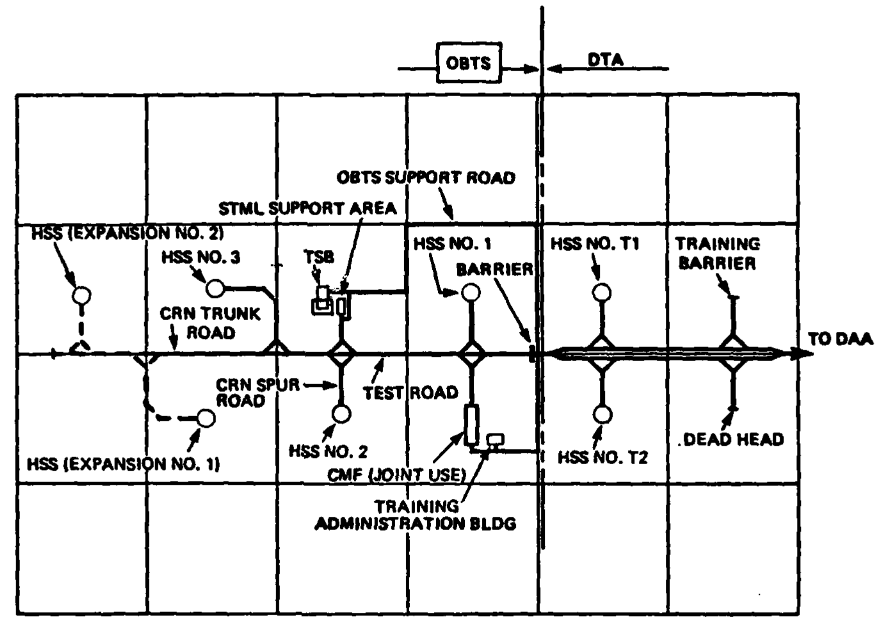
Once site-specific suitable areas were identified in Nevada and Utah, layouts were produced which applied the baseline conceptual layout using the direct connect 5200-foot (1585-m) MPS basing mode. These layouts also integrated those siting requirements and considerations which were appropriate. In this process, numerous layout configurations were generated to take maximum advantage of the local topographic relief and to reduce the "No Public Use" ground coverage needed from each HSS by using a closed hexagonal pattern. DTN alignments between

the OBTS/DTA and the MOB/DAA were routed using the DTN siting requirements as presented in Part I of this report.

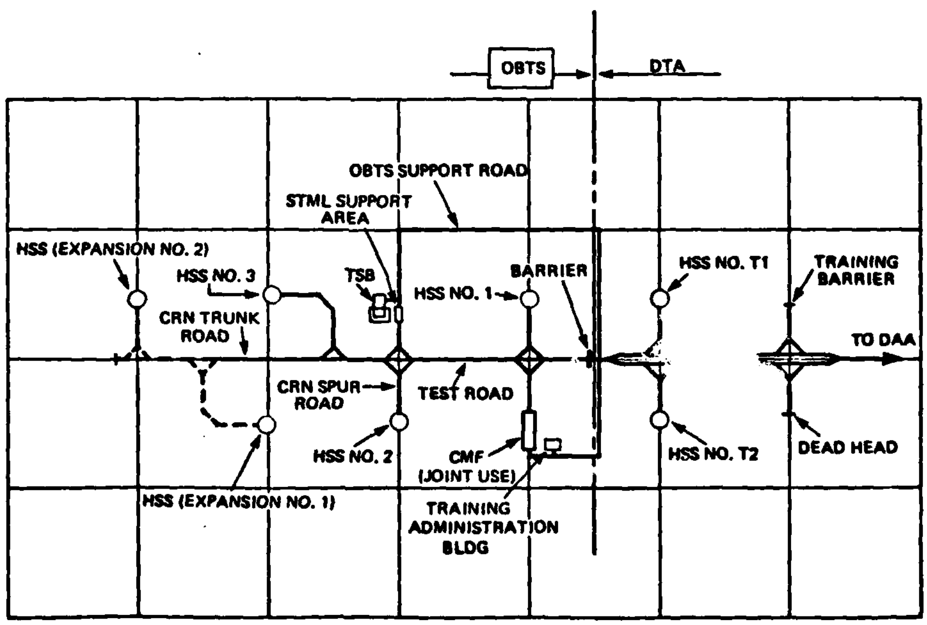
Similar layout alternatives were produced using the sectioned land 5200-foot (1585-m) basing mode in New Mexico. These layouts were based on Ertec generated baseline conceptual layouts which placed the HSS on the section line or in the middle of a section (Figure 3-2). The HSS in the middle of the section was presented in the Draft Environmental Impact Statement (DEIS) (U.S. Department of the Air Force, 1980). The existing roads on the section lines were used as the cluster road network.

With the siting area defined and the layouts developed, preferred and alternate site evaluations for each MOB/DAA area were performed. Each site was evaluated against the siting requirements. For each MOB study area, the site and DTN route which produced the most optimum set of siting factors was selected as the preferred. The second most optimal site was designated as the alternate. Where the preferred site had both preferred and alternate layouts, the alternate layout was generally preferred over the use of the alternate site.

Alternate HSS spacing concepts were also produced. By maintaining the established siting requirements, but enlarging the spacing from 5200 feet (1585 m) to 1.73 miles (2.78 km), numerous new layouts were developed (see Figure 4-15).

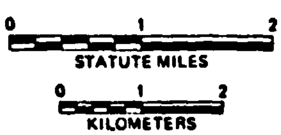


CONCEPTUAL OBTS/DTA BASELINE LAYOUT FOR SECTIONED LAND



ALTERNATE CONCEPTUAL OBTS/DTA BASELINE LAYOUT FOR SECTIONED LAND

*Grid represents existing roads along township and range section lines



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CONCEPTUAL OBTS/DTA BASELINE LAYOUTS FOR SECTIONED LAND

OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEW MEXICO

30 NOV 81 FIGURE 3-2

3.3 PERFORMING FIELD RECONNAISSANCE AND SURVEYS

Field reconnaissance trips were performed at all of OBTS locations. The field observations made it possible to evaluate the actual terrain and geotechnical conditions at the sites. This input was integrated into the conceptual layout development process.

After the conceptual layouts were produced, quarter-mile buffer zones were drawn around the sites. These boundaries delimited that area where environmental field surveys and geotechnical field inspections were performed. The DTN alignments from the OBTS/DTA to the MOB/DAA were also surveyed. The results of these surveys were to have been presented in the Ertec DTN/OBTS Field Surveys Report. This report was not completed due to a stop work order.

3.4 COORDINATING THE SITING PROCESS

To provide the necessary OBTS/DTA siting coordination and evaluations of preferred and alternative sites, a series of working group, data exchange, and technical interchange (TI) meetings were held. These meetings served as coordinating functions between the various subcontractors and the AFRCE-MX.

The working group meetings provided an opportunity for open discussion on the siting factors and their applications. This coordination effort provided a means of making decisions which incorporated all inputs and supported the selection of the preferred and alternate OBTS/DTA areas for each MOB/DAA option.

Data exchange meetings were initiated to include the descriptions of these proposed actions and alternatives in the tiered decision-making process. The meetings were concerned with the following.

- o Coordination between the contractors performing siting tasks;
- o Providing the environmental contractor with layouts of those preferred and alternate facilities and alignments needed for environmental assessment (i.e., Tier IIA deliverables); and
- o Delivering to the environmental contractor the data generated during environmental field surveys and geotechnical inspections.

Technical interchange meetings provided the client with an opportunity to exchange ideas, provide program updates, and obtain preliminary results of ongoing activities. Those TI meetings related to OBTS/DTA were concerned with the following activities.

- o Coordination among members of the OBTS/DTA working group; and
- o Presentation of the OBTS/DTA area parcels, parcel descriptions and appropriate DTN alignments for presentation in the MX system land acquisition application package.

All layouts produced were reviewed by the BMO/AFRCE-MX and the OBTS/DTA working group.

3.5 TIERING AND LAND ACQUISITION DELIVERABLES

The preferred and alternate OBTS/DTA area parcels presented in the MX system land acquisition application package and for delivery to the environmental assessment contractor were developed by the following processes.

- o Draw a 1-mile (1.6-km) "No Public Use" area radius around HSS 1 and 2;
- o Produce a tight footprint around the "No Public Use" area, the DTA, HSS, and the connecting roads;
- o Develop a land acquisition parcel boundary by determining the township, range, and quarter sections around the zone; and
- o Determine the parcel description based on the quarter-section boundary.

The OBTS/DTA parcels were then depicted on "E" size sheets using a 1:62,500 scale topographic base. A series of sheets were produced for each combination of preferred and alternate MOB/DAA with the appropriate preferred and alternate OBTS/DTA; each facilities combination depicted its own unique DTN alignment as well. It was intended that the AFRCE-MX would provide the multi-optional package to the COE. The COE would make the appropriate request for land to the Bureau of Land Management (BLM). This was done so that once the decision-makers had decided on the preferred combination of facilities, only a short delay would occur before the application could be delivered to the BLM.

4.0 OBTS/DTA SITING EVALUATION

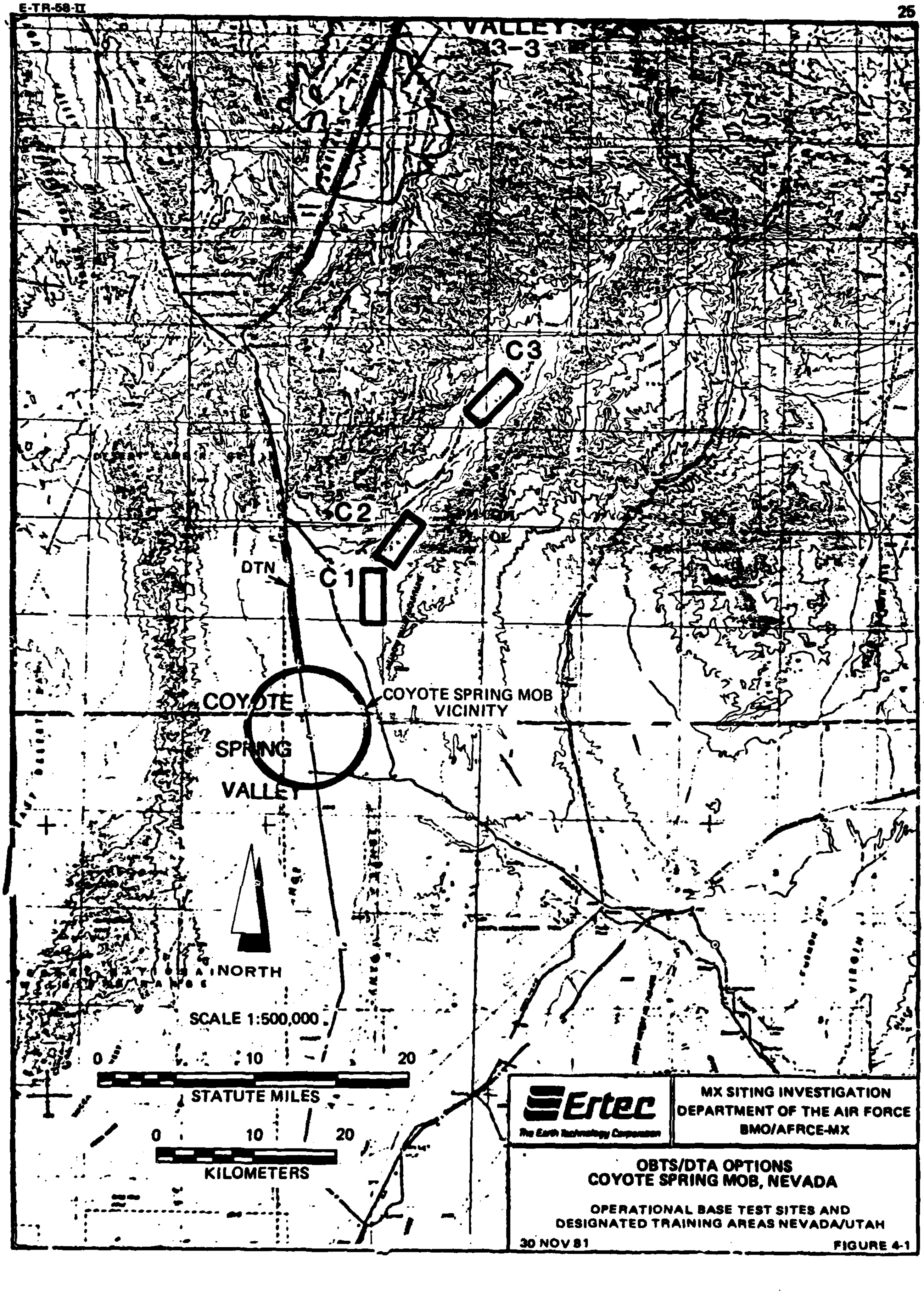
Evaluations were performed to determine the OBTS/DTA alternatives for each MOB/DAA option. These evaluations are based on the methodology presented in Section 3.0. The following is a summary of the evaluations and the major areas of concern.

4.1 OBTS/DTA EVALUATION - COYOTE SPRING, NEVADA

4.1.1 Suitable Sites

A regional study of the Coyote Spring study area, based on the 22 April 1981 siting requirements, produced two potential OBTS sites (C2, C3) in Kane Springs Valley. The original OBTS site (C1), proposed in FY 80, was also included to verify the need for resiting (Figure 4-1). Rectangular shapes, representing the relative layout area, were developed for each site. A site in Delamar Valley was deemed not possible, even if both the existing and proposed power lines and the DTN were rerouted or a cluster was removed. Each site was evaluated at a site-specific scale (1:62,500) against the 22 April 1981 requirements, and an evaluation table was developed. The results of that comparison are presented in Table 4-1.

On 12 May 1981, a field reconnaissance of the Coyote Spring OBTS/DTA study area was performed by the OBTS working group. Of the three sites, only Option C2 was noted as having adverse geotechnical characteristics. The northeast half of Option C2 contains areas of caliche and adverse terrain. On 27 May 1981, after the BMO/AFRCE-MX review and prior to the 27 May 1981



OBTS/DTA OPTIONS
COYOTE SPRING MOB, NEVADA

OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81 FIGURE 4-1

OBTS/DTA FOR A COYOTE SPRING MOB

OPTION C1 ORIGINAL OBTS	OPTION C2 KANE SPRINGS VALLEY WEST	OPTION C3 KANE SPRINGS VALLEY CENTRAL
• 5 miles to DAA • 4 miles to DTN/major highway • 4 miles to existing power line • 2 1/2 miles to proposed IPP line • Some area subject to flooding • Grade > 5% (20% area) • WSA east of option • Desert tortoise in option • Big horn sheep to the east of option	• Outside OB vicinity zone • 4 1/2 miles to proposed IPP line • Some cemented gravels (caliche) • Adverse terrain (10% area) • Grade > 5% (40% area) • WSA east of option • Desert tortoise in option • Big horn sheep to the east of option	• Outside DEIS boundary • 20 miles to DAA • Possible future upgrading of Kane Springs Road to state highway • Some area subject to flooding • WSA southeast of option • Desert tortoise in option • Big horn sheep north and southeast of option

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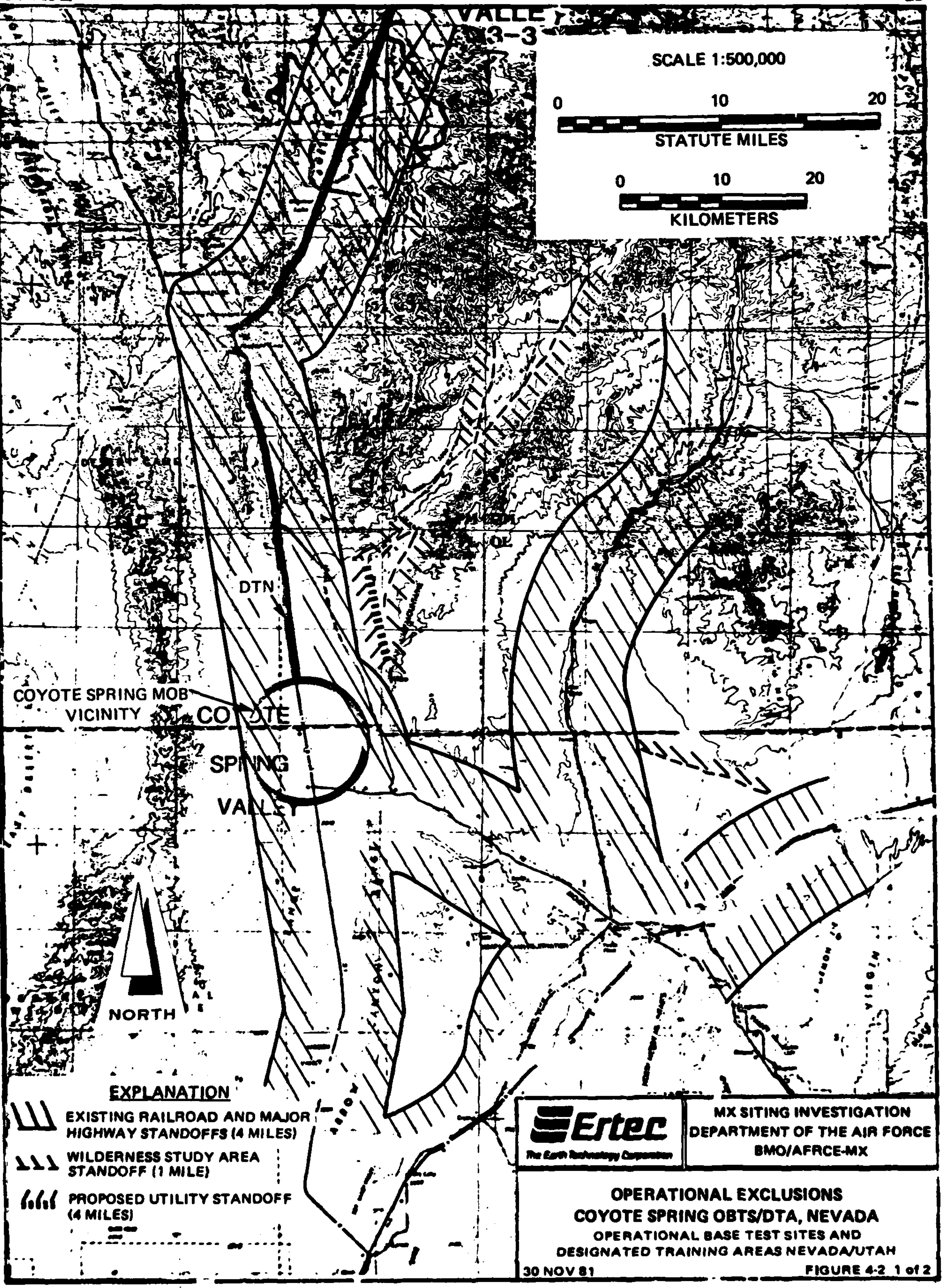
OBTS/DTA SITE EVALUATIONS
COYOTE SPRING MOB, NEVADA
OPERATIONAL BASE TEST SITE AND DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81 TABLE 4-1

requirements being finalized, it was determined that Option C3 must be eliminated because it is outside the DEIS boundary. Also, Option C2, although greater than 4 miles (6 km) from the proposed IPP power lines, was less than desirable because the northern half was outside the MOB vicinity zone as well as being only marginally suitable. The southern half of Option C2 remained suitable. Option C1 was determined to be the most desirable area, but only if the proposed IPP power lines could be rerouted further to the west to increase the 2 1/2-mile (4-km) standoff to 4 miles (6 km).

After receiving the 27 May 1981 siting requirements, the study area was reevaluated at a regional scale (Figures 4-2 through 4-5). Applying a 4-mile (6-km) standoff requirement, it was determined that the original areas around Option C1 and southern Option C2 were the only suitable locations available. The proposed IPP power lines would still need to be moved further to the west. A site-specific evaluation was performed for the remaining suitable area options (C1 and south C2) at a scale of 1:62,500. The suitability of the area was again confirmed and the limits of the area more exactly defined. Figures 4-6 through 4-8 represent this process by depicting a more detailed determination of the operational, geotechnical, and environmental exclusions and considerations in the area of Option C1. These data are composited to form a window of suitability (i.e., that area not excluded) or siting area as presented in Figur 4-9. [illegible]ing the site-selection process and as


SCALE 1:500,000
0 10 20
STATUTE MILES
0 10 20
KILOMETERS
DTN
COYOTE SPRING MOB VICINITY
COYOTE SPRING VALLEY
NORTH
EXPLANATION
EXISTING RAILROAD AND MAJOR HIGHWAY STANDOFFS (4 MILES)
WILDERNESS STUDY AREA STANDOFF (1 MILE)
PROPOSED UTILITY STANDOFF (4 MILES)
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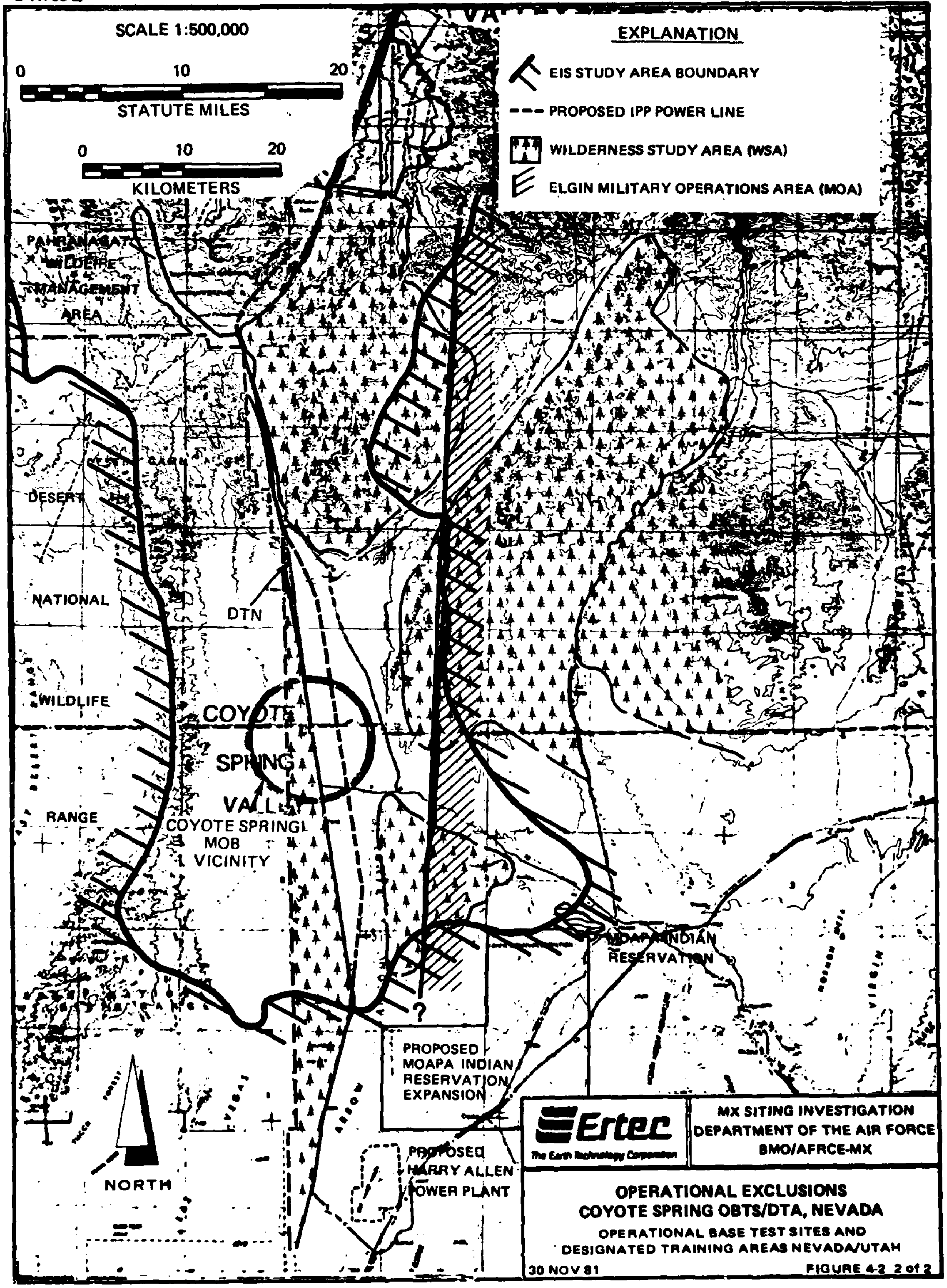
COYOTE SPRING OBTS/DTA, NEVADA
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
FIGURE 4-2 1 of 2



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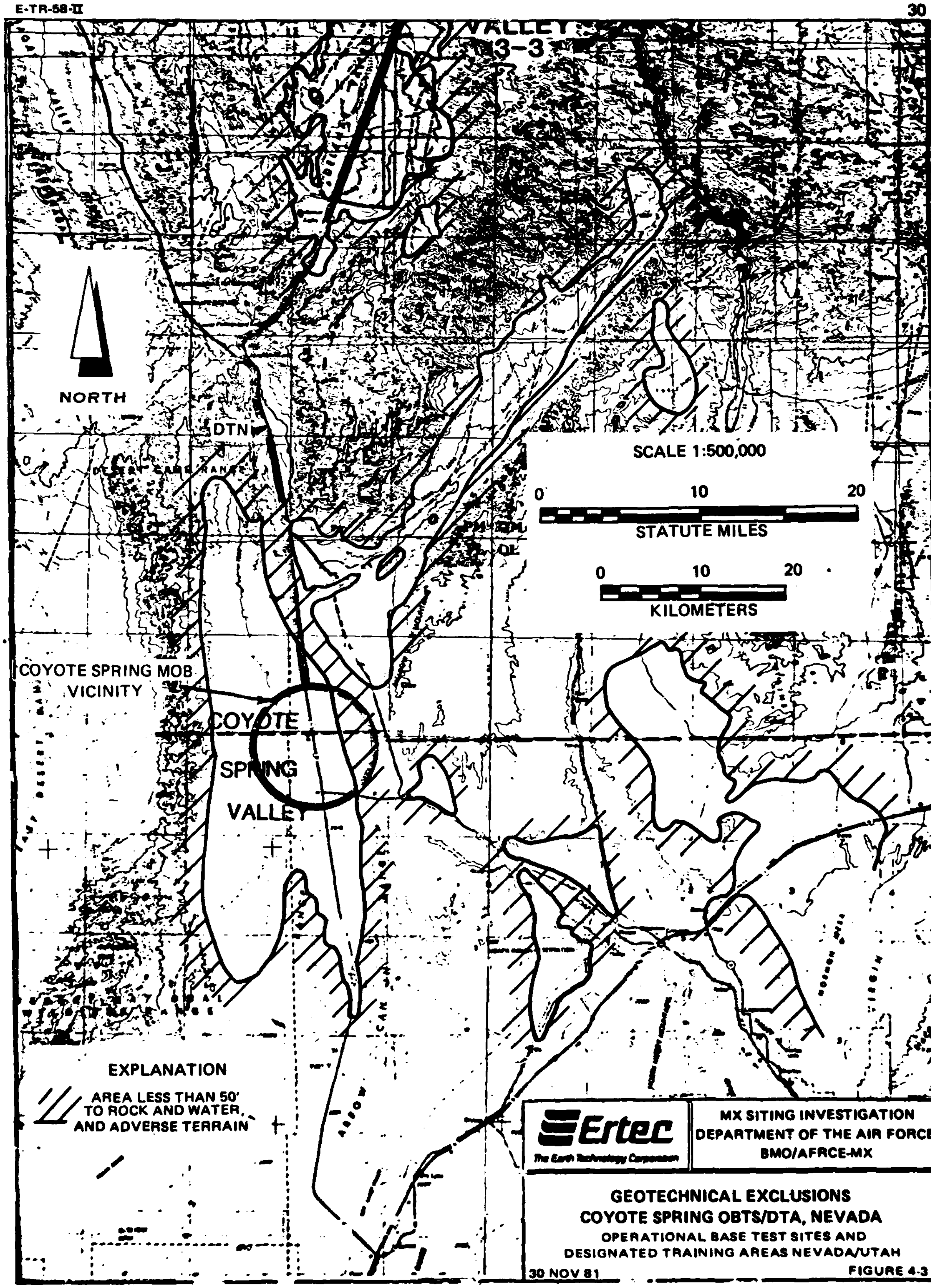
OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81

FIGURE 4-2 2 of 2



GEOTECHNICAL EXCLUSIONS
COYOTE SPRING OBTS/DTA, NEVADA
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

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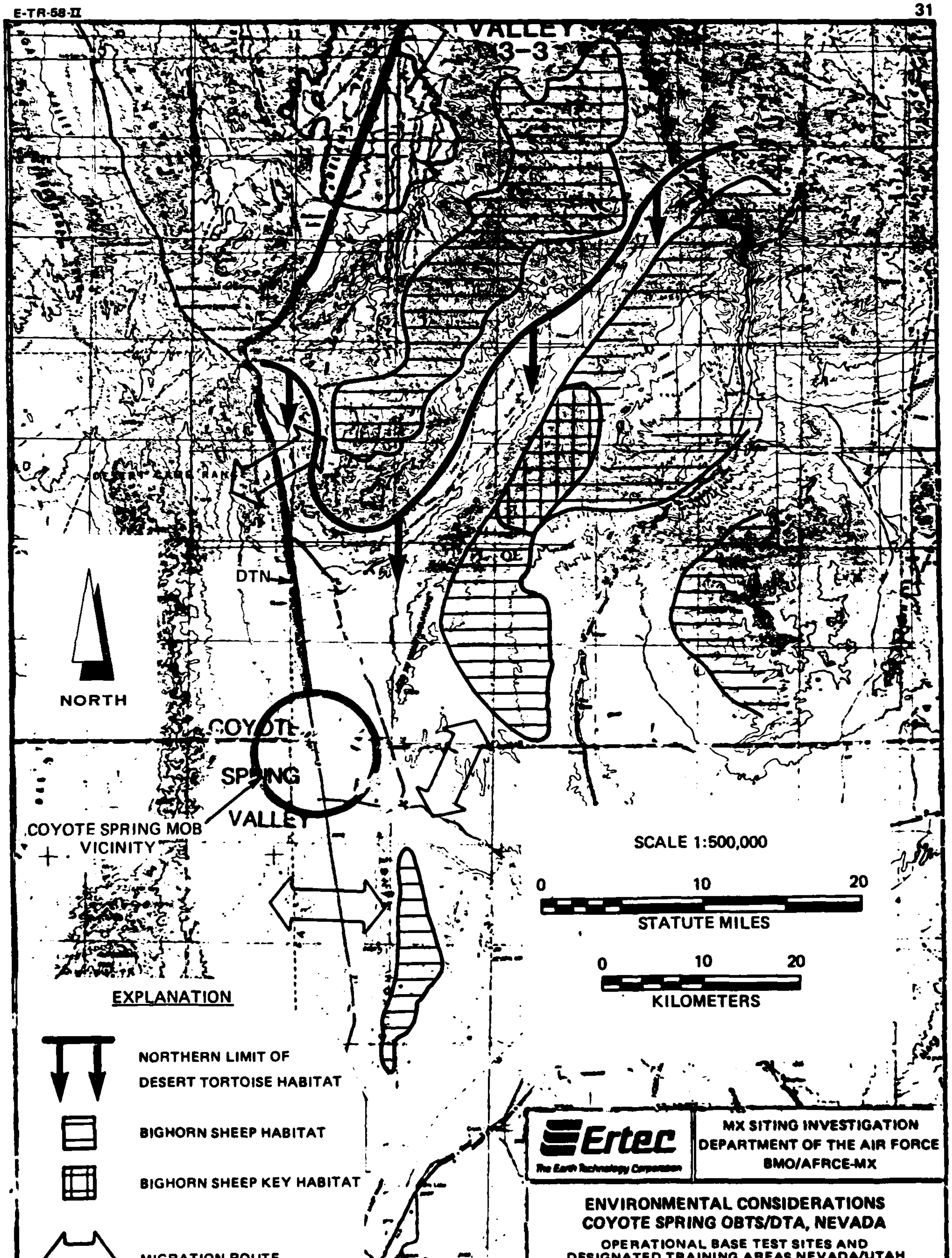
FIGURE 4-3


VALLEY
3-3
DTN
NORTH
COYOTE
SPRING
VALLEY
COYOTE SPRING MOB
VICINITY
SCALE 1:500,000
0
10
20
STATUTE MILES
0
10
20
KILOMETERS
EXPLANATION
NORTHERN LIMIT OF
DESERT TORTOISE HABITAT
BIGHORN SHEEP HABITAT
BIGHORN SHEEP KEY HABITAT
MIGRATION ROUTE
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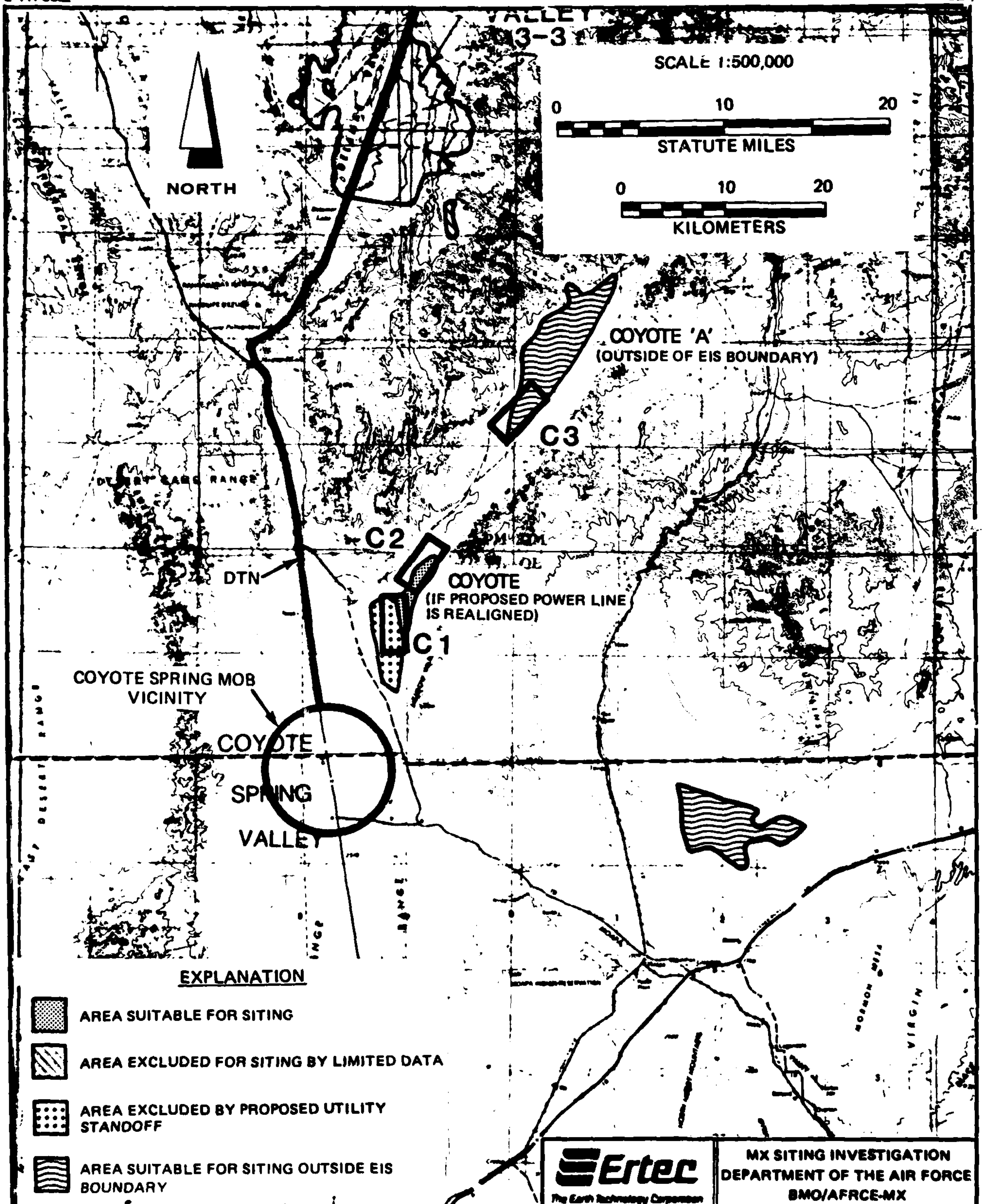
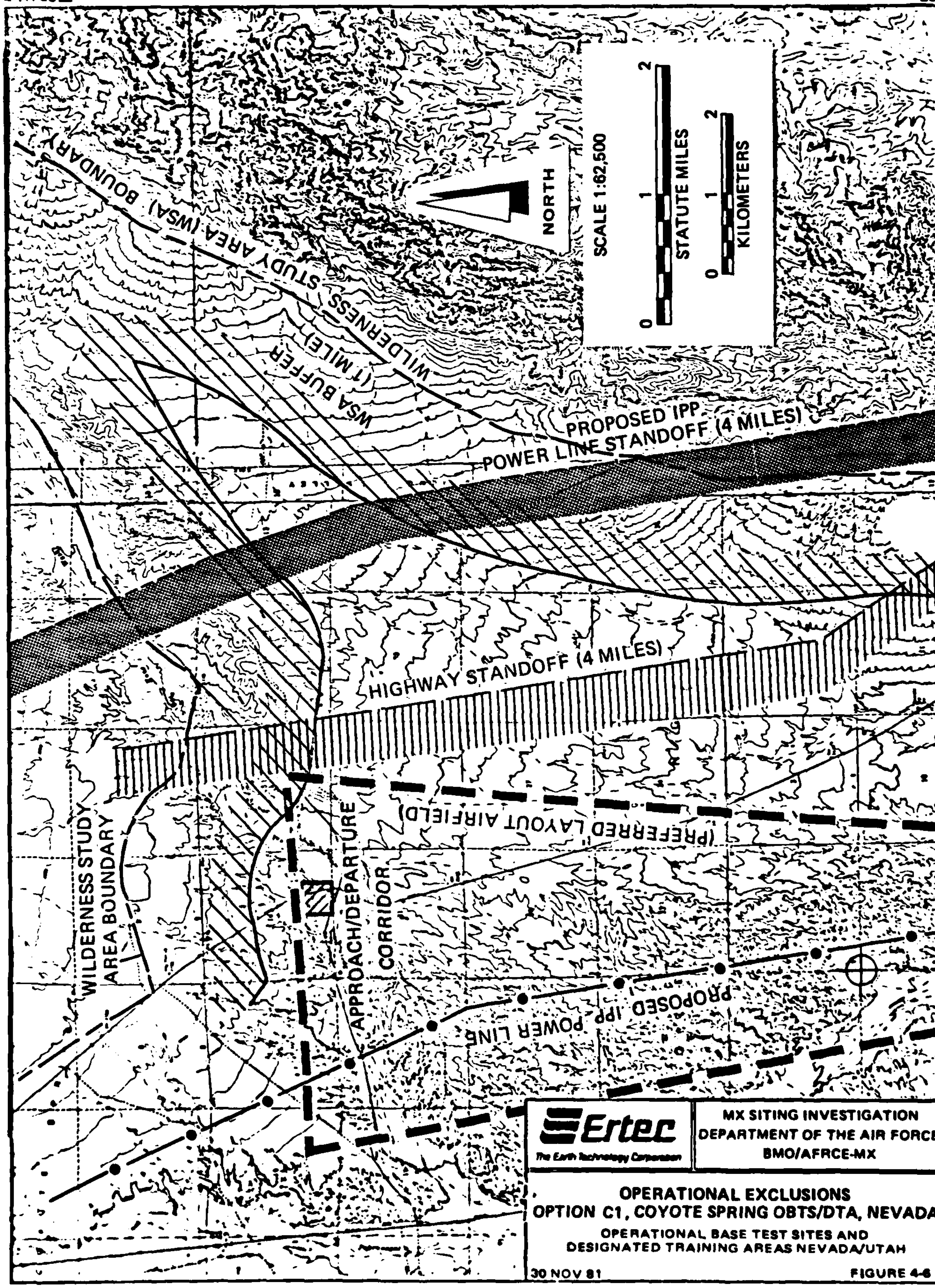
COYOTE SPRING OBTS/DTA, NEVADA
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
FIGURE 4-4



VICINITY ZONES
COYOTE SPRING OBTS/DTA, NEVADA
OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81 FIGURE 4-5



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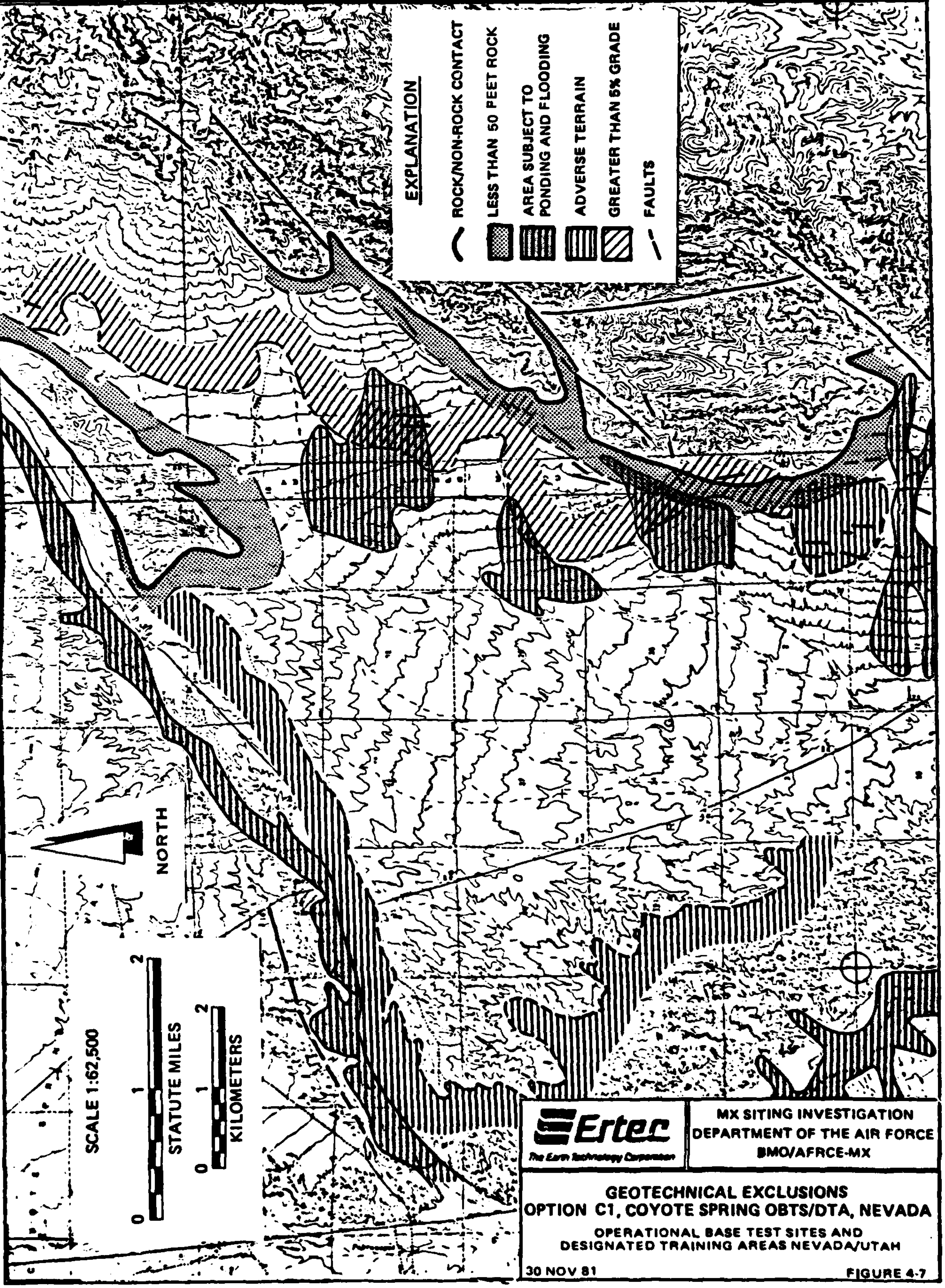
OPERATIONAL EXCLUSIONS
OPTION C1, COYOTE SPRING OBTS/DTA, NEVADA

OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81 FIGURE 4-6


EXPLANATION
ROCK/NON-ROCK CONTACT
LESS THAN 50 FEET ROCK
AREA SUBJECT TO PONDING AND FLOODING
ADVERSE TERRAIN
GREATER THAN 5% GRADE
FAULTS
NORTH
SCALE 1:62,500
0 1 2
STATUTE MILES
0 1 2
KILOMETERS
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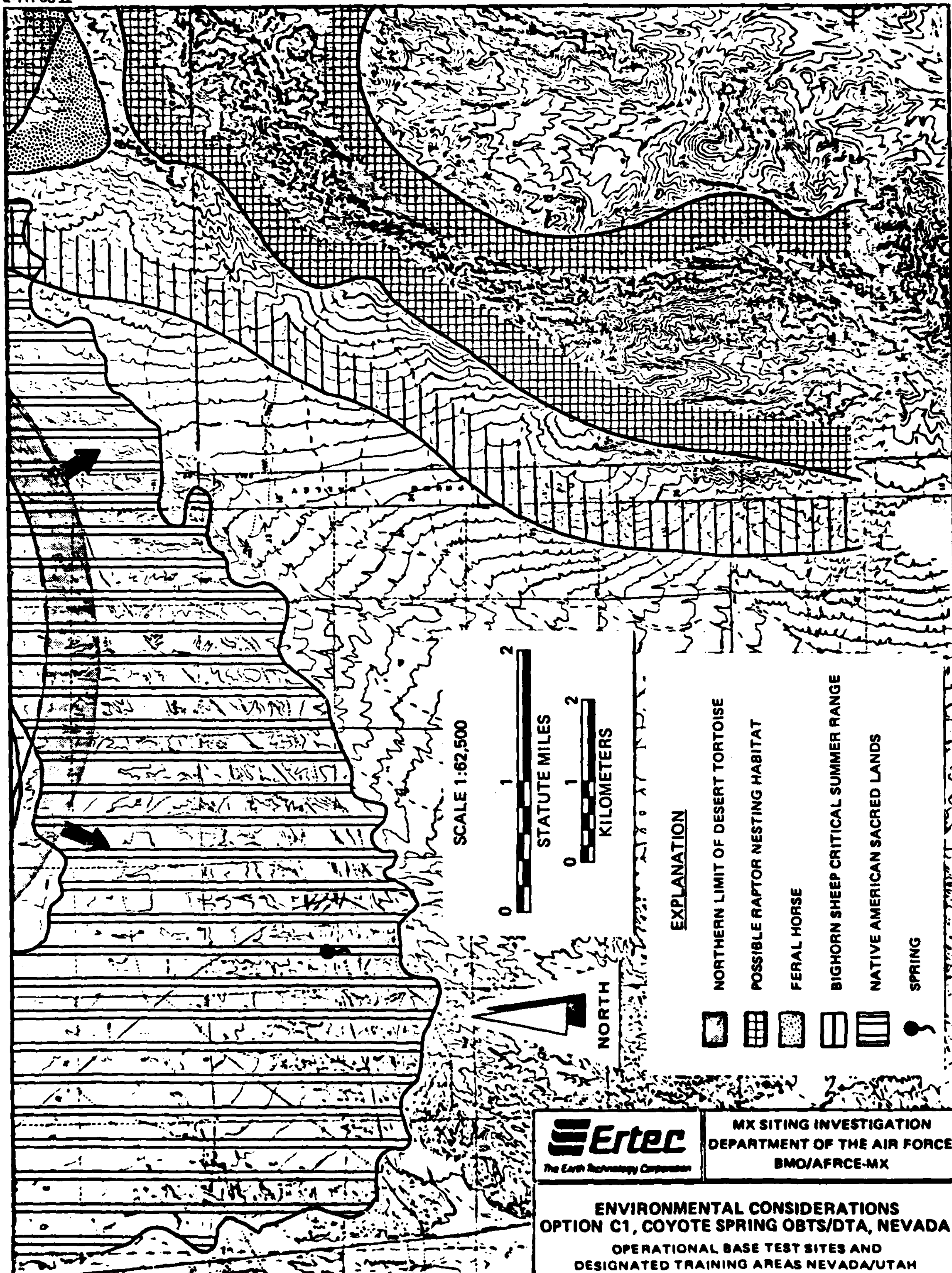
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
FIGURE 4-7



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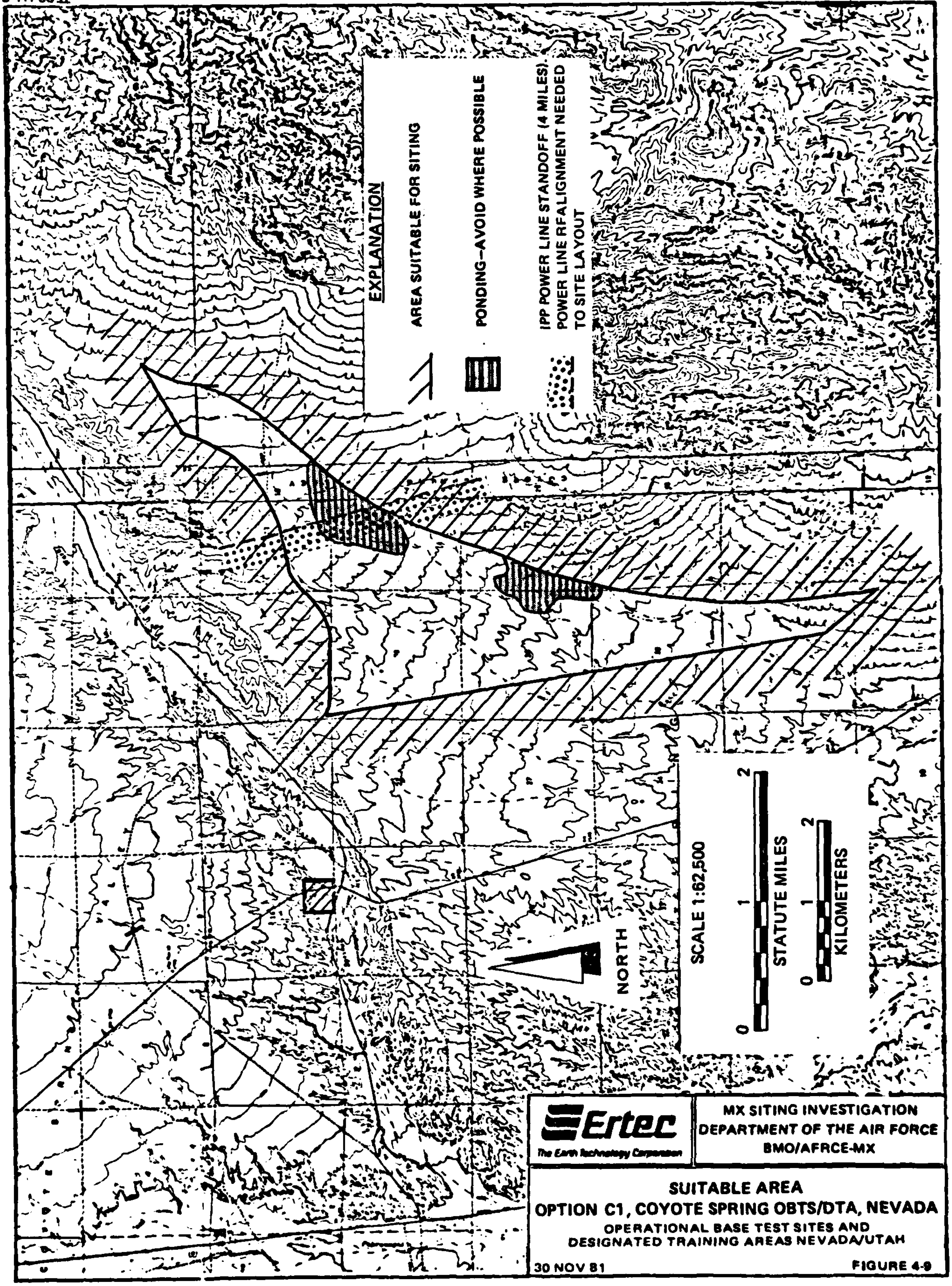
ENVIRONMENTAL CONSIDERATIONS
OPTION C1, COYOTE SPRING OBTS/DTA, NEVADA

OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81 FIGURE 4-8



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SUITABLE AREA
OPTION C1, COYOTE SPRING OBTS/DTA, NEVADA
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

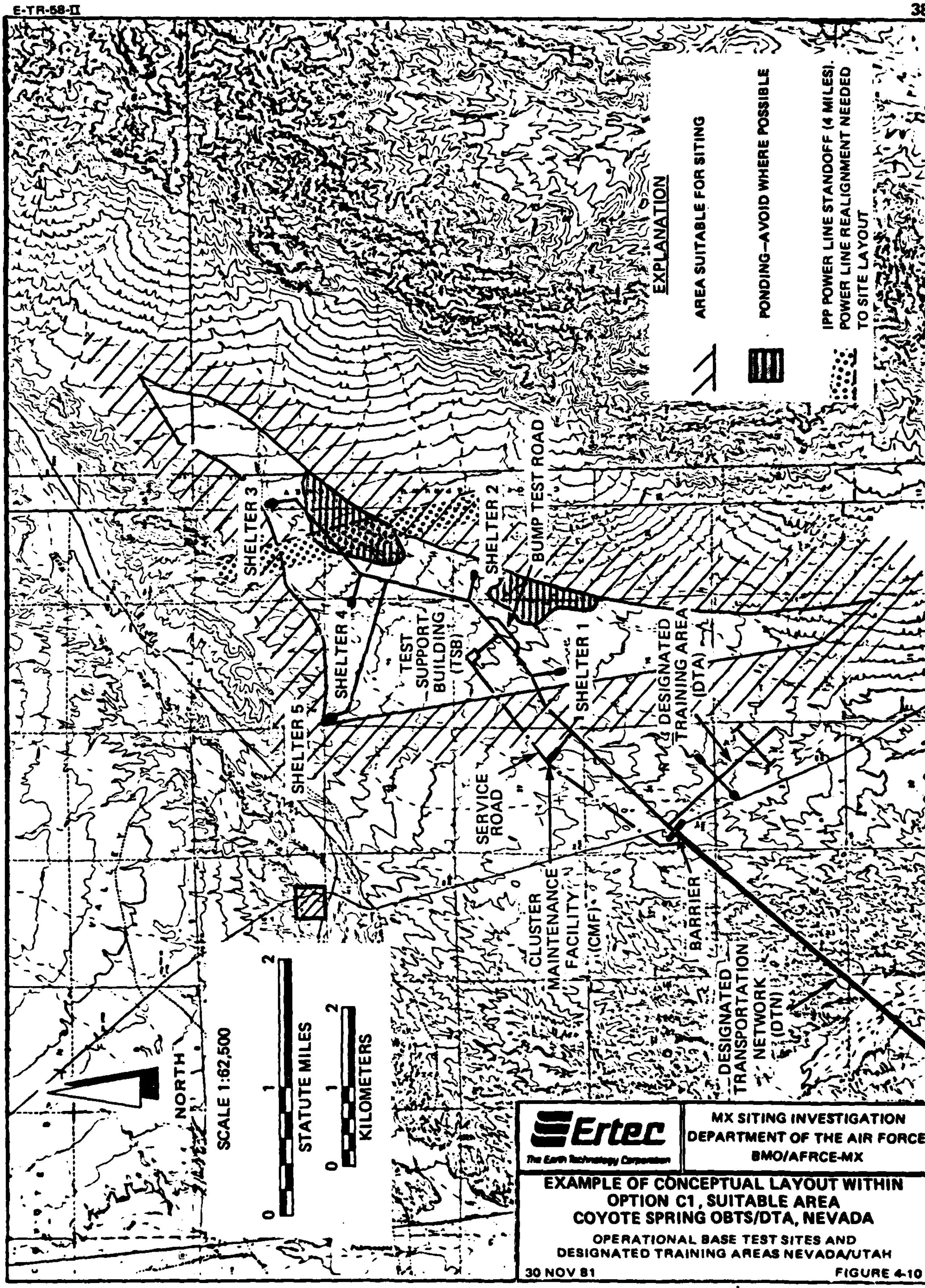
30 NOV 81 FIGURE 4-9

an ongoing activity, coordination between the OBTS working group and the base comprehensive planner (EDAW, Inc.) was taking place.

4.1.2 Conceptual Layouts

Numerous OBTS and DTA layouts, as well as DTN alignments between the MOB and the OBTS/DTA, were performed within this new site-specific suitable area (Figure 4-10). These layouts were developed with the assumption that Kane Springs road was not a major service road. The state has the option of upgrading this road into a state highway. Based on this potential action, the question of standoff distance from the road was raised.

New layouts to the south were produced. To accommodate a maximum HSS move to the south, the HSS standoff requirement was modified. The requirement was changed so that only HSS 1 and 2 need to maintain a 4-mile (6-km) standoff. The HSS 3 through 5 standoff distance was lowered to 3 miles (5 km). With this new southern Coyote Spring layout, HSS 1 and 2 are separated from the Kane Springs road by 4 miles (6 km) and the other HSSs by a minimum of 1 mile (1.6 km). The associate DTN from the MOB/DAA to the OBTS/DTA was also moved further south. Both the original and new DTN routes provide the shortest distance between the respective OBTS/DTA and the MOB/DAA by crossing, rather than going around, the Pahranagat Wash. The DTA is also located outside suitable area. Although the power line standoff is not met, the geotechnical conditions are still satisfactory. The standoff requirements apply to the OBTS only.



EXAMPLE OF CONCEPTUAL LAYOUT WITHIN OPTION C1, SUITABLE AREA COYOTE SPRING OBTS/DTA, NEVADA

OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81 FIGURE 4-10

After completion of the preliminary siting and layout process, an evaluation to select the preferred and alternate OBTS/DTA locations was performed. Since there was only one site at Coyote Spring, the evaluation was between potential layouts. The siting requirements were evaluated for each layout and the optimal layout and DTN route were selected as the preferred OBTS/DTA location (Table 4-2 and Figures 4-20 and 4-21). The southern layout in C1 is the preferred, while the northern layout is the alternate.

4.2 OBTS/DTA EVALUATION - BERYL, UTAH

4.2.1 Suitable Sites

The regional study of the Beryl study area included the original OBTS site (B1), as well as two potential OBTS/DTA sites (Figure 4-11). One of these sites is at the southwest end of Hamlin Valley (B2) and the other is southeast of Table Mountain in the Escalante Desert (B3). Rectangular shapes were developed for each site based on the 22 April 1981 siting requirements. The original site (B1), as assumed, did not meet the railroad standoff requirements. No sites in Pine Valley were possible because of the terrain and the standoff exclusion from the DTN.

A reconnaissance within this study area was performed on 13 May 1981. Both sites appeared geotechnically acceptable. Option B2 was located close to an active ranch with reseeded range land in the vicinity. The site was relocated further north into more natural vegetation. The primary existing road access

COYOTE SPRING, NEVADA OBTS/DTA

Preferred – Option C1 (south)

Pros

- 4 miles to DAA
- 4 miles to existing power lines
- 4 miles to DTN
- 100 percent BLM land
- No major drainage

Cons

- 2½ miles to proposed IPP line
- Desert tortoise in OBTS/DTA
- Big horn sheep east of OBTS/DTA

Alternate – Option C1 (north)

Pros

- Only other potential site
- 100 percent BLM land
- No major drainage

Cons

- 6 miles to DAA
- 3 miles to DTN
- 3 miles to existing power line
- 1 mile to major service road (Kane Springs Road; potential upgrade to state highway)
- 2½ miles to proposed IPP line
- Desert tortoise in OBTS/DTA
- Big horn sheep east of OBTS/DTA

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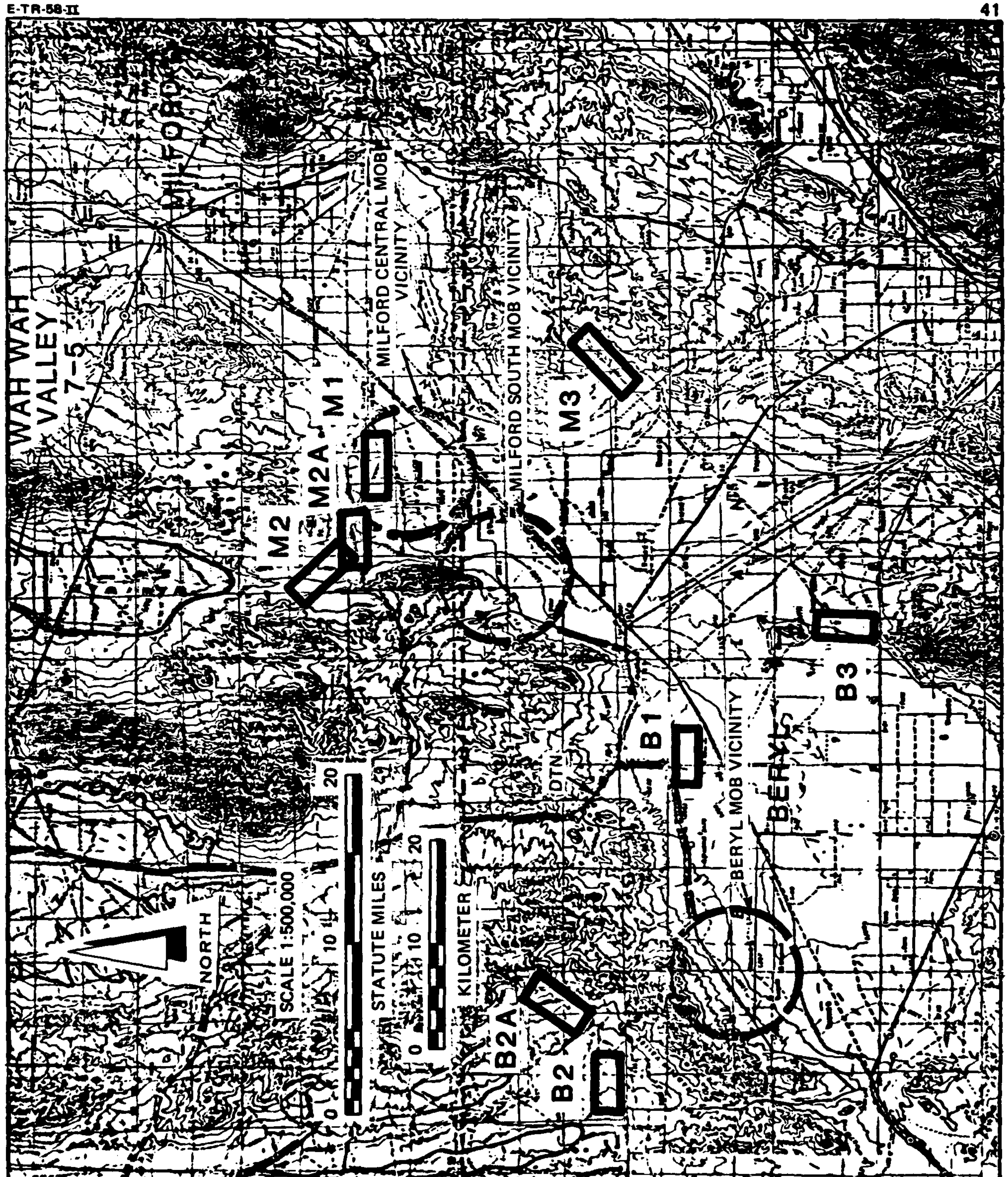
PREFERRED VS ALTERNATE
OBTS/DTA OPTION EVALUATION
COYOTE SPRING, NEVADA
OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81 TABLE 4-2



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OBTS/DTA OPTIONS
BERYL/MILFORD MOB'S, UTAH
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81

FIGURE 4-11.

from the Beryl MOB/DAA south into southern Hamlin Valley is through Modena Draw Pass. This route is excessive and greater than the optimum of 10 miles (16 km). A much shorter DTN access between the MOB/DAA by way of Negro Liza Wash Pass was deemed feasible. On 27 May 1981, after the BMO/AFRCE-MX review and prior to receiving the finalized requirements, it was determined that Option B1 (original site) did not meet the standoff requirement from the railroad and this site was eliminated. Also, another site (Option B2A) in the southeastern portion of Hamlin Valley should be added as an alternative. Option B3 was thought to be only marginally acceptable because the requirements were only minimally satisfied. The specific site evaluations and comparisons generated are presented in Table 4-3.

Having received the 27 May 1981 siting requirements, a regional scale reevaluation using a 4-mile (6-km) standoff exclusion was performed at the Beryl sites (Figures 4-12 through 4-15). This evaluation resulted in Option B2 being eliminated because of its proximity to a high potential mining area and a north-south trending, potentially major, service road. Option B2A and the DTN route through Negro Liza Wash continued to be acceptable. Option B3 was found to be bisected by the proposed Rocky Mountain natural gas line which would have to be relocated to make this location feasible. These sites were reexamined during the site-specific scale evaluation (Appendix A-5 through A-12). The site options were coordinated with and integrated into EDAW's MOB activities.

OBTS/DTA FOR A BERYL MOB			
OPTION B1 ORIGINAL OBTS	OPTION B2 SOUTH HAMLIN VALLEY (WEST)	OPTION B2A SOUTH HAMLIN VALLEY (EAST)	OPTION B3 TABLE BUTTE SOUTH
• 3 miles to DTN • 1/2 mile to railroad • 1/2 mile to power line • Small area subject to flooding • Impact on ranching - 83% private land • Feral horse range to the northwest of option	• Outside OB vicinity zone • 7 1/2 miles to DAA • 12 miles to DAA (no existing road, this route) • 3 miles to nearest shelter • Water depth < 50' in northwest corner • Some adverse terrain to north and east • 48% private land • Mining activity to the west of option	• Outside OB vicinity zone • 7 1/2 miles to DAA • 10 1/2 miles to DAA (no existing road, this route) • 1 mile to nearest shelter • Adverse terrain to west • Shallow rock to northeast • 100% BLM land • Elk—winter range in option • Ferruginous hawk nest sites in option • Feral horse range to east of option	• 19 miles to DAA • 5 miles to railroad • 2 1/2 miles to proposed IPP line • Proposed Rocky Mountain gas line passes through site • Water depth <50' in northwest 1/2 of site • Impact on ranching – 88% private land • Bald eagle and antelope range in option

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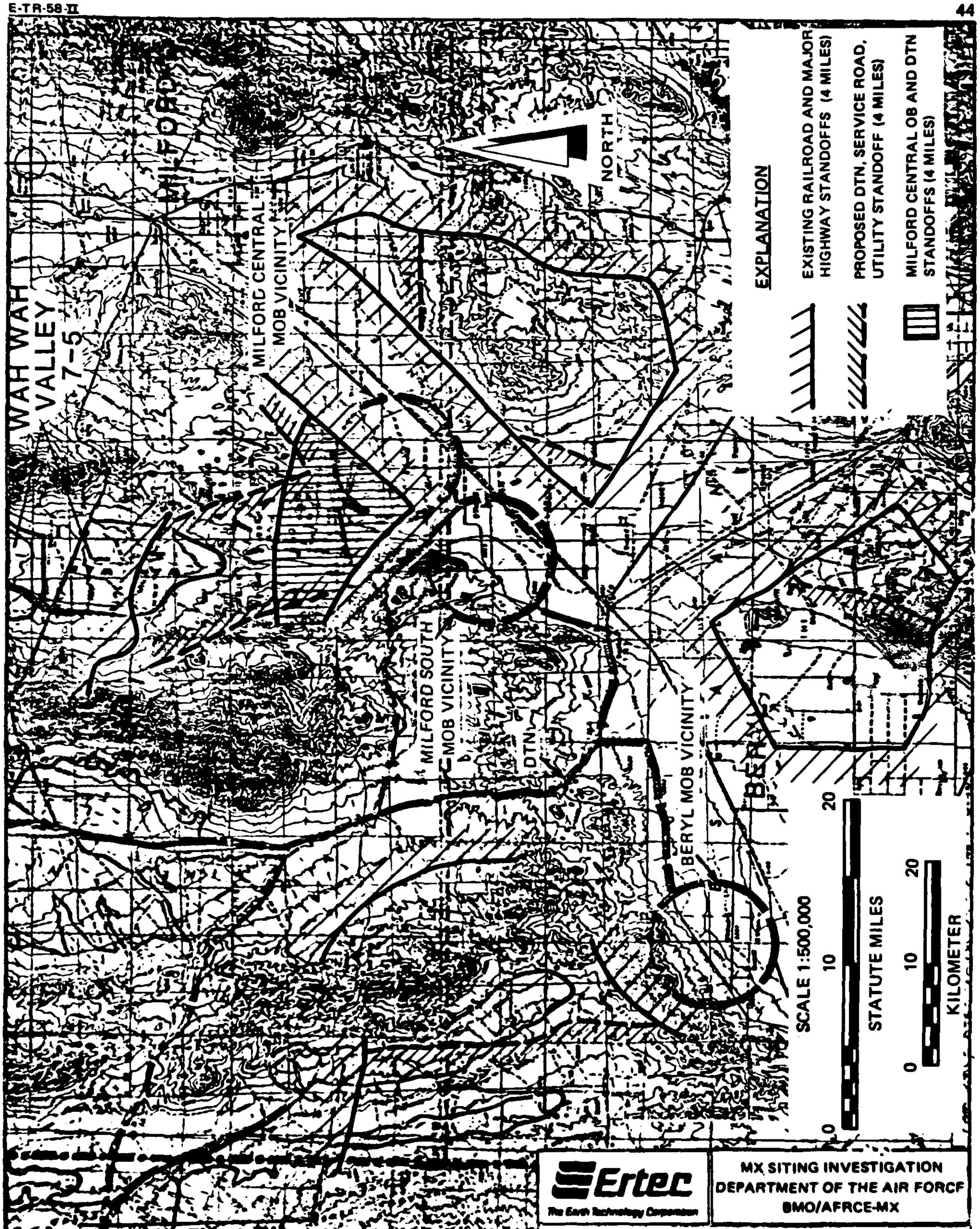
OBTS/DTA SITE EVALUATIONS
BERYL MOB, UTAH

OPERATIONAL BASE TEST SITE AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81

TABLE 4-3



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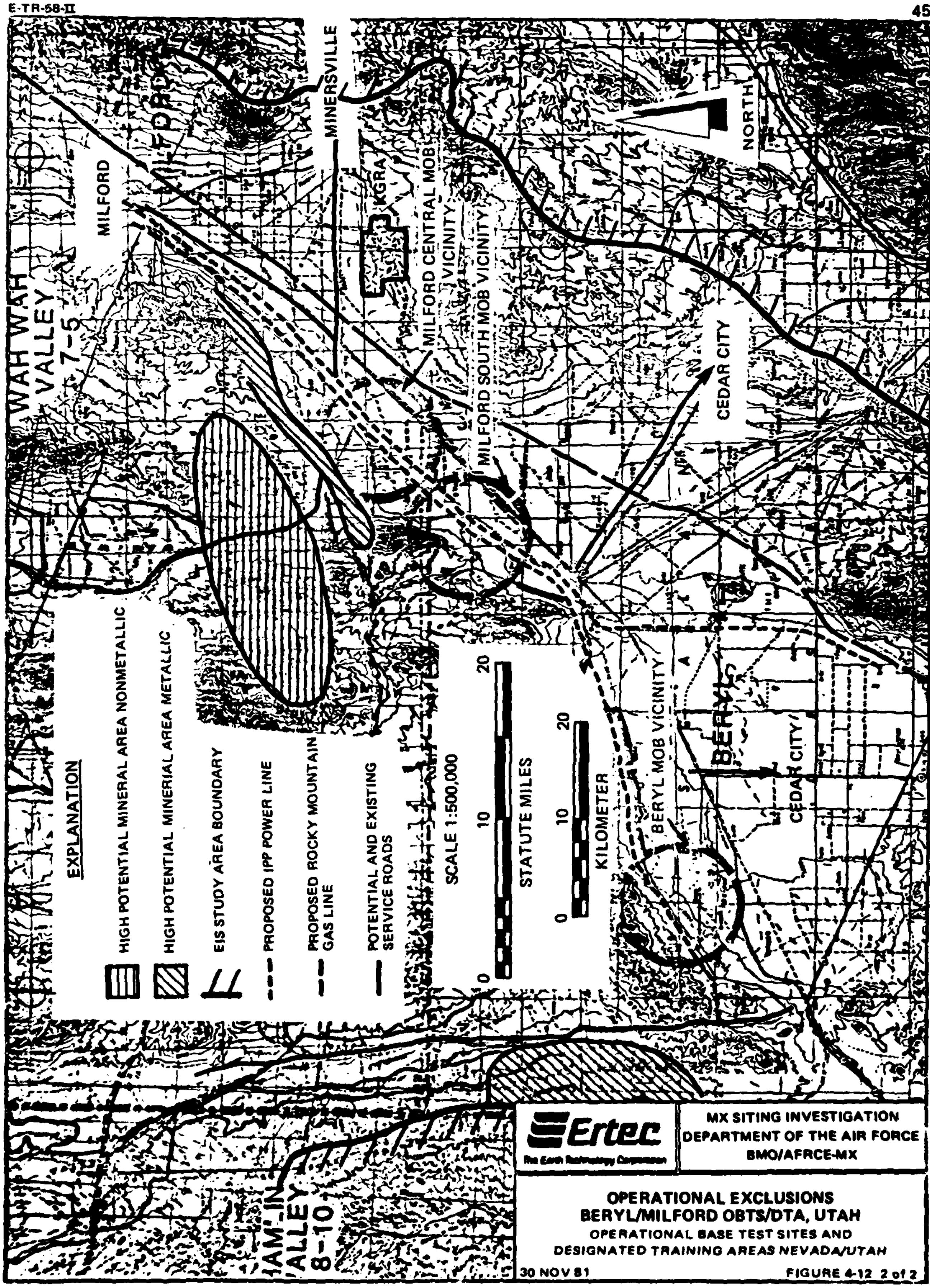
OPERATIONAL EXCLUSIONS
BERYL/MILFORD OBTS/DTA, UTAH
OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81 FIGURE 4-12 1 of 2



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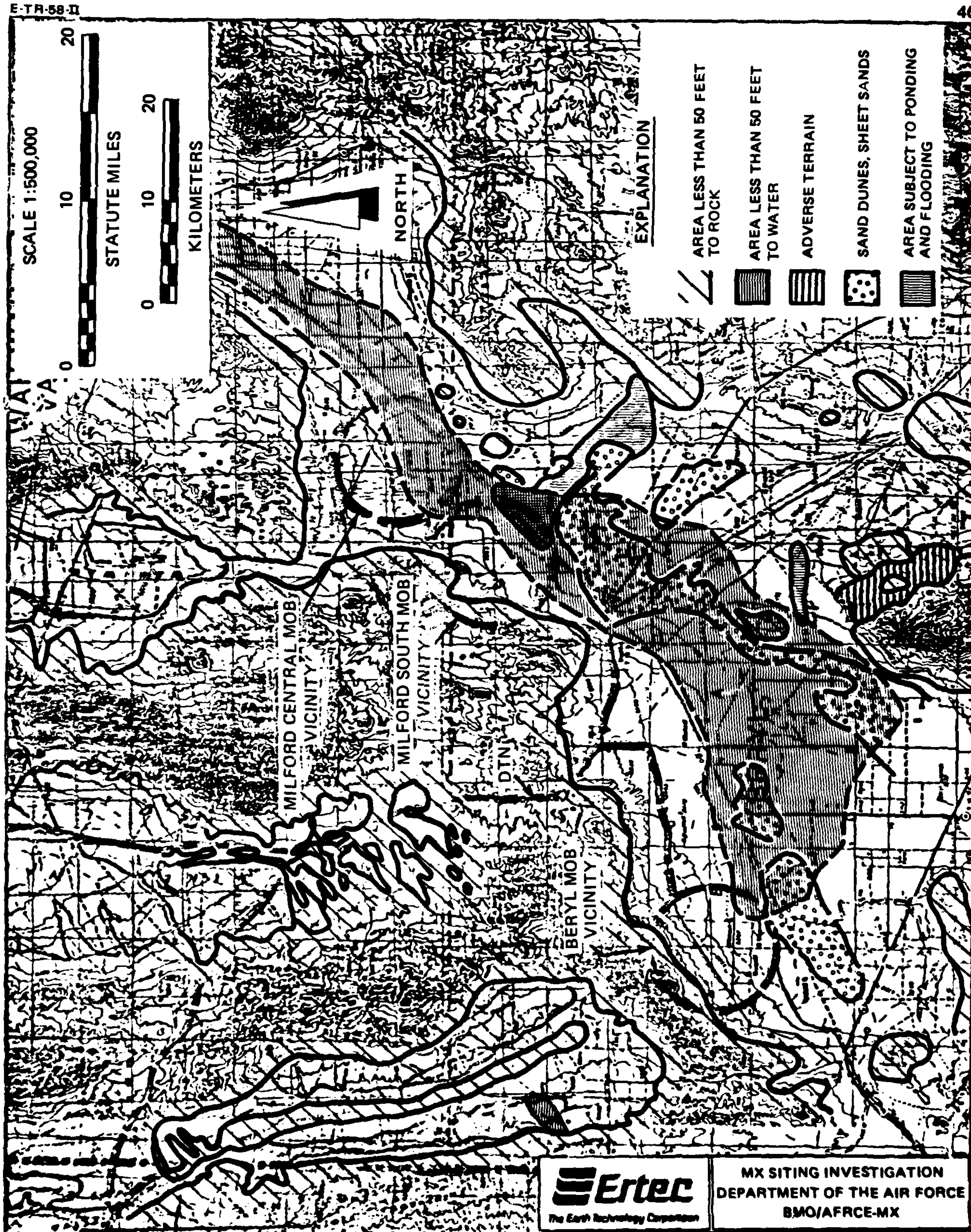
BERYL/MILFORD OBTS/DTA, UTAH
OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81 FIGURE 4-12 2 of 2



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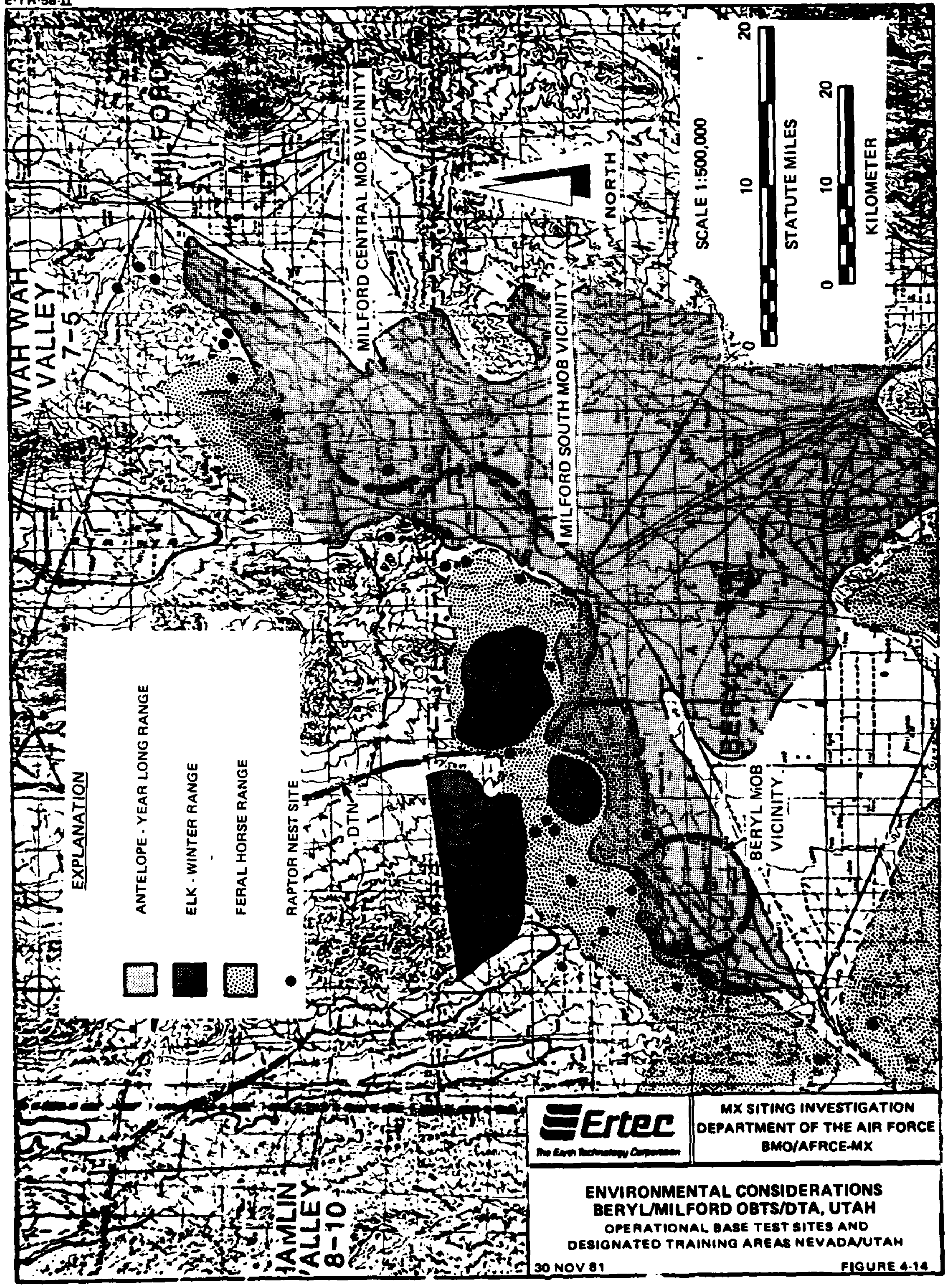
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81 FIGURE 4-13



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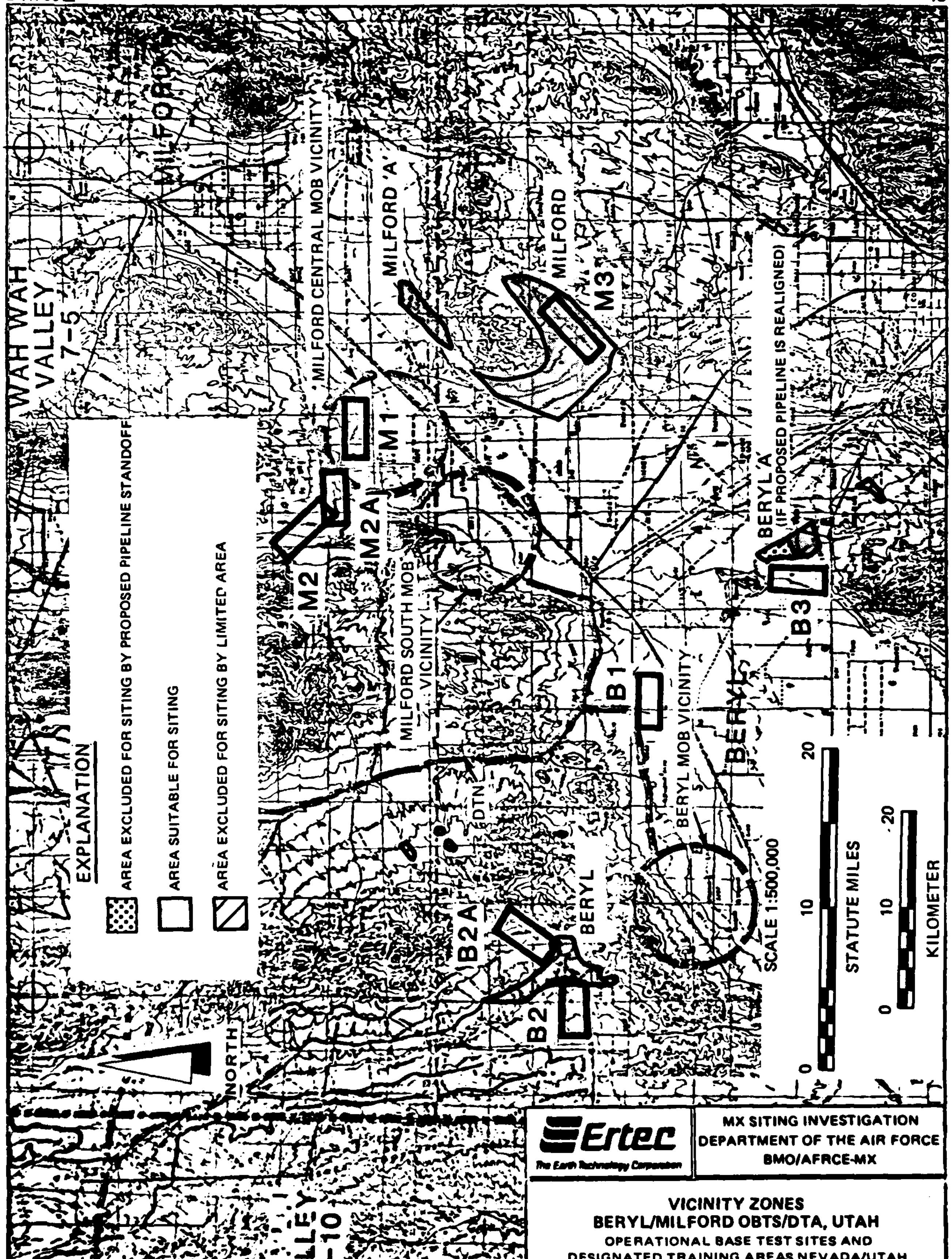
ENVIRONMENTAL CONSIDERATIONS
BERYL/MILFORD OBTS/DTA, UTAH
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81

FIGURE 4-14



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VICINITY ZONES
BERYL/MILFORD OBTS/DTA, UTAH
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81

FIGURE 4-15

4.2.2 Conceptual Layouts

Within the new site-specific suitable area, numerous OBTS and DTA layouts as well as DTN alignments between the MOB/DAA and the OBTS were performed. Layout concerns for Option 2A, located within southern Hamlin Valley, were the avoidance of adverse terrain to the west, private property to the south, springs in the southeast, and the wintering range for elk in the east. Layouts were developed to accommodate these concerns.

For all layouts, Negro Liza Wash was used for DTN access. The layout in Option B3, south of Table Mountain, was developed in an area bisected by a presently unsurveyed alignment of a proposed natural gas line. To maintain the 1-mile (1.6-km) standoff distance from this gas line, the OBTS was sited to the south of the pipeline alignment standoff. North of the proposed gas line there is insufficient suitable area in which to site the DTA. Also, the area northwest of the proposed gas line has ground water levels less than 50 feet (15 m) from the ground surface.

The proposed gas line would have to be rerouted to the north side of Table Mountain for the DTA to be sited outside the gas line standoff distance and within the suitable area. Presently, the DTA is depicted 1/2-mile (1 km) north of the approximated gas line alignment and in the area of less than 50 feet (15 m) to water. If the gas line cannot be rerouted, BMO would need to reevaluate the present requirements for DTA siting and

determine if these requirements need to be as stringent as the OBTS.

The DTN alignment to Option B3 crosses the railroad track at Zane. It then follows an existing road through sand dunes and a small playa. Efforts to reroute around these areas would only lengthen the amount of road construction and not avoid the sand dunes. The concerns addressed for this segment of DTN are in no way worse than those encountered by the DTN throughout the DDA. Also, the DTN between the facilities would have to be designed to cross over the pipeline. There is insufficient area for an alternate layout.

After the preliminary site-selection and layout development was completed, an evaluation to determine the preferred and alternate OBTS/DTA locations was performed. For each site, the siting requirements were evaluated. The optimal site and DTN route were selected as the preferred. The southern Hamlin site (B2A) is the preferred and the Table Mountain (B3) area is the alternate site for Beryl. Table 4-4 presents the alternative site comparison.

4.3 OBTS/DTA EVALUATION - MILFORD, UTAH

4.3.1 Suitable Sites

The regional study of the Milford study area included the original FY 80 OBTS sites (M1) and two additional OBTS sites (Figure 4-16). One of these sites is at the southern end of Wah Wah Wash (M2) and the other is south of the railroad in the area of the Escalante Desert called "the Neck" (M3).

BERYL, UTAH OBTS/DTA

Preferred – Option B2A

Pros

- 7 ½ miles to DAA
- 100 percent BLM land
- No major drainage
- 11 miles to railroad
- 4 miles to major service road
- 5 miles to potential mining activities

Cons

- Within 2 miles to nearest cluster
- Elk – winter range in OBTS/DTA
- Ferruginous hawk nest site in OBTS/DTA
- Feral horse range to east

Alternate – Option B3

Pros

- Only other potential site

Cons

- 21 miles to DAA
- 15 miles to DTN
- Proposed gas pipeline through OBTS/DTA
- Realignment required to obtain minimum suitable area
- Ponding in OBTS/DTA
- Must cross railroad from OB
- Bald eagle and antelope range in OBTS/DTA
- 80 percent private land

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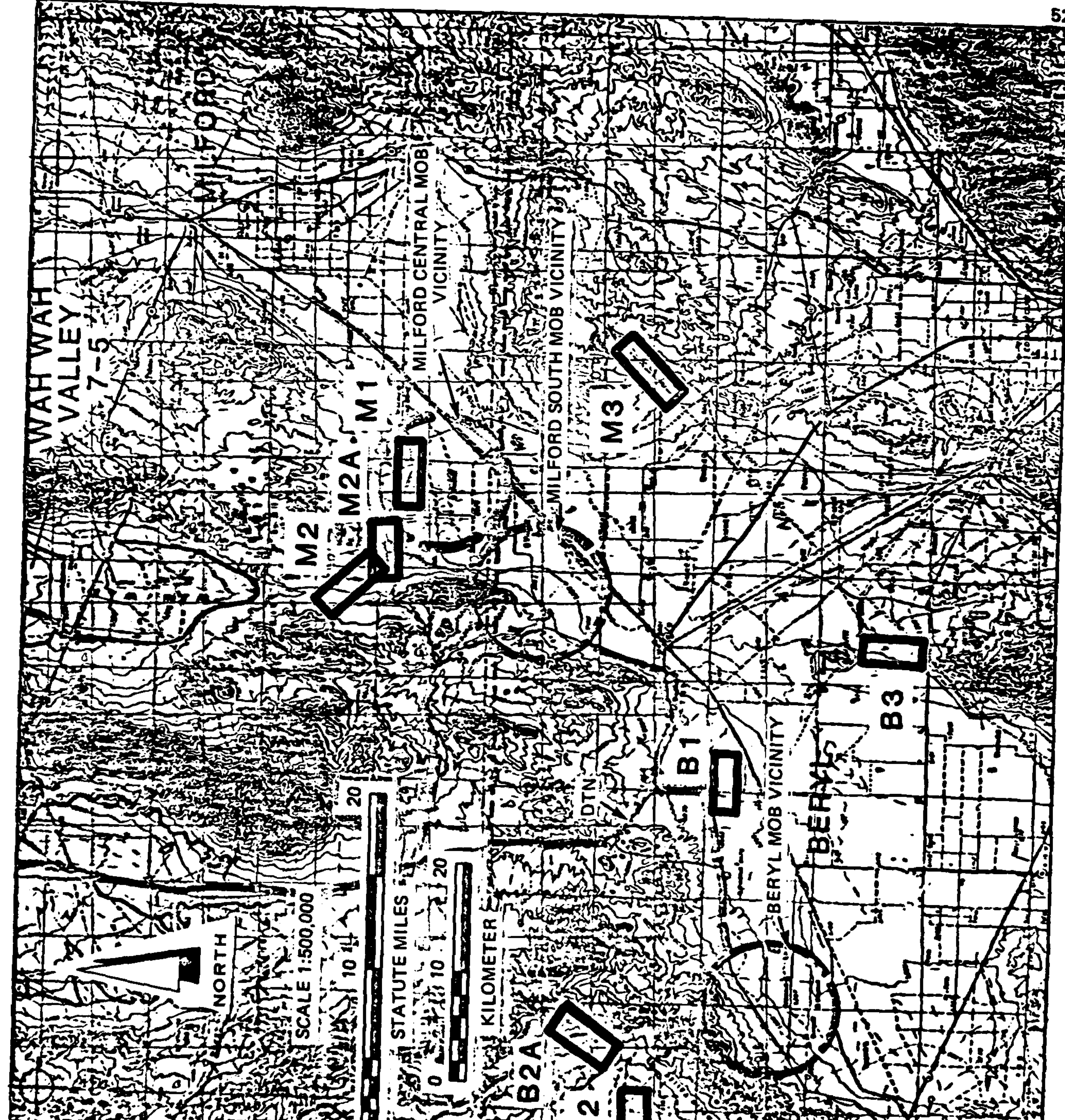
PREFERRED VS ALTERNATE
OBTS/DTA OPTION EVALUATION
BERYL, UTAH
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81 TABLE 4-4



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OBTS/DTA OPTIONS
BERYL/MILFORD MOB'S, UTAH
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

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FIGURE 4-16

Rectangular shapes were developed for each site based on the 22 April 1981 siting requirements. Milford MOB consisted of three options; North, Central, and South. Milford MOB North was dropped because of the high mineral activity in the area. Initially, OBTS/DTA Options M1, M2, and M2A were sited assuming the southern MOB was considered the preferred site. Option M2 was eliminated because of its proximity to a high metallic mineral potential area. Option M2A was generated in an effort to maintain a site in that location by avoiding the mineral problem area. Both Options M1 and M2A were eventually eliminated due to the high probability of a main service road passing through or nearby the sites. No sites in Wah Wah Valley were possible because of the standoff exclusion from State Highway 21, the potential loss of a cluster, the mining activity, and the use of the area as a major north-south service road. Each specific site was reevaluated at 1:62,500 scale against the requirements, and a comparison chart was produced (Table 4-5).

The OBTS working group performed a reconnaissance of this study area on 14 May 1981. Although sufficient depth to rock data were not available, all of the sites appeared geotechnically suitable. Telephone poles traversed "the Neck" site (M3) but no lines were strung on the poles. The DTN route to each site did not appear to pose a problem. On 27 May 1981, after the BMO/AFRCE-MX review and prior to receiving the final requirements, it was agreed that all sites north of the tracks were

OBTS/DTA FOR A MILFORD SOUTH MOB			OBTS/DTA FOR A MILFORD CENTRAL MOB
OPTION M1 ORIGINAL OBTS	OPTION M2 AND M2A WAH WAH WASH	OPTION M3 THE NECK, EAST OF LUND	OPTION M3 THE NECK, EAST OF LUND
• 3 1/2 miles to OB • 7 1/2 miles to DAA • 2 miles to railroad • 0 mile to proposed IPP line • 1 mile to service road • Antelope range in option	• Outside OB vicinity zone • 8 miles to DAA • 5 1/2 miles to DTN (2A-5 miles) • 8 miles to railroad (2A-6 miles) • Service road next to site • Northwest half option 2 and northwest corner option 2A in high potential mineral area • Some rock outcrops in 2A • Potential shallow rock in options 2 and 2A (~20%)	• 12 miles to DAA • 6 1/2 miles to Highway 19 • 9 miles to railroad • Some area to southwest subject to flooding • One drainage about 20 feet to northeast • Mule deer winter range and antelope range in option • Bald eagle range south of option	• 13 miles to DAA • 6 1/2 miles to Highway 19 • 9 miles to railroad • Antelope range in option

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OBTS/DTA SITE EVALUATIONS
MILFORD MOB, UTAH

OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81

TABLE 4-5

not acceptable. Later, Milford Central MOB became the preferred MOB option.

In addition to Options M1 and M2A being unsuitable, as previously discussed, they are also unacceptable because they do not meet the standoff distance from the Milford Central MOB. Only Option M3 remained acceptable.

Upon receiving the 27 May 1981 siting requirements, all Milford sites were reevaluated at a regional scale, using a 4-mile (6-km) standoff (Figures 4-12 through 4-15). The sites north of the railroad tracks remained unacceptable. The limits of the suitable area around Option M3 were increased. The area of "the Neck" was still the preferred portion of Option M3 suitable area. A new location originally called Milford "A" came into existence. For reference, the site is now named Option M3A. This site is north of "the Neck" and southeast of the railroad tracks. It just meets all minimum standoff requirements and is bordered by two Known Geothermal Resource Areas (KGRA).

During the site-specific evaluation, the suitable area limits were more accurately depicted (Appendix A-13 through A-20). Interaction took place with EDAW, in regards to both the site-selection process and MOB coordination. Of special concern was coordination of the Milford South versus Milford Central MOB locations in analyzing the preferred and alternate OBTS/DTA sites.

4.3.2 Conceptual Layouts

Numerous layouts of the OBTS and DTA were performed within the new site-specific suitable areas. Many alignments of the DTN between MOB/DAA and the OBTS/DTA were studied. These layouts and alignments addressed the problems of minimizing the distance and providing proper orientation of the OBTS/DTA to the different MOB/DAA options. The DTN alignments selected were also intended to provide the shortest construction mileage. Similar routing conditions as in the Beryl study area are present in the Milford study area. Use of the existing roads and BLM land was maximized.

Once the siting area and layouts were developed, the potential preferred and alternate OBTS/DTA locations were evaluated. At each site, the siting requirements were reviewed and a preferred site selected. For both a Milford Central MOB and a Milford South MOB, the preferred OBTS/DTA is the "the Neck" (M3) site, and the alternate site is Option M3A. The evaluation of the respective sites is presented in Table 4-6.

4.4 OBTS/DTA EVALUATION - CANNON AFB, NEW MEXICO

4.4.1 Suitable Sites

Regional studies in the vicinity of Cannon AFB were performed in two phases. The first phase consisted of siting a preferred IOC area and developing a DTN from the MOB/DAA at Cannon AFB to the IOC area. The portions of the suitable area evaluated were labeled the North, Central (West), and South sections (Figure 4-17). These areas are divided by both railroads and U.S.

MILFORD, UTAH OBTS/DTA

Preferred – Option M3

Pros

- Site best meets preferred standoff requirements
- 9 miles to railroad
- 8 miles to Highway 19
- 100 percent BLM land

Cons

- 16 miles to DAA
- One major drainage on west side
- DTN must cross railroad
- Mule deer winter range and antelope range in OBTS/DTA
- Bald eagle range south of OBTS/DTA

Alternate – Option M3A

Pros

- 7 miles from DAA
- 85 percent BLM land

Cons

- Minimum amount of suitable area
- Site meets only minimum standoff requirements
- DTN must cross railroad
- KGRA north of OBTS/DTA
- Antelope and sage grouse range in OBTS/DTA

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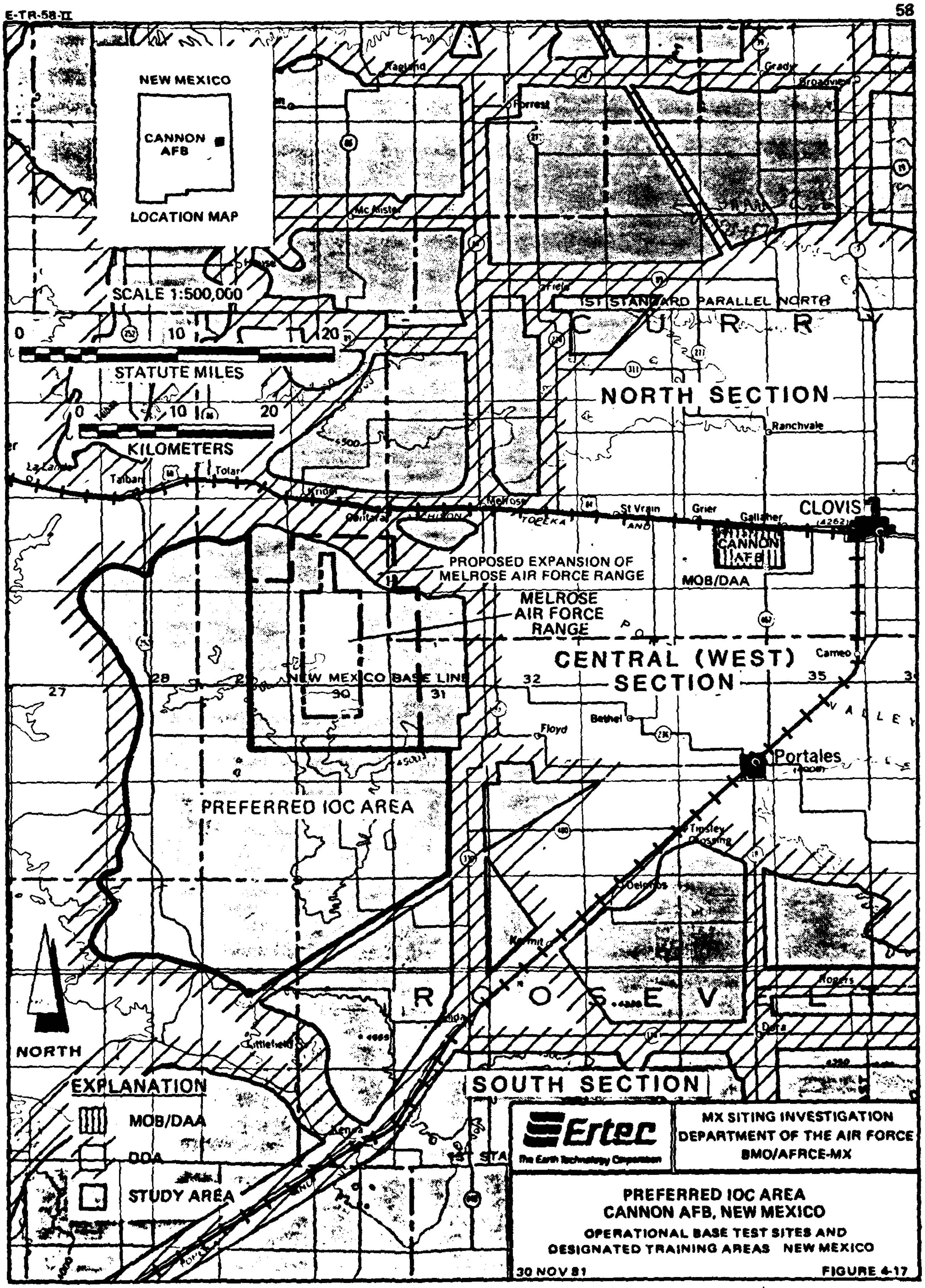
OBTS/DTA OPTION EVALUATION
MILFORD, UTAH
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81 TABLE 4-6


NEW MEXICO
CANNON AFB
LOCATION MAP
SCALE 1:500,000
0 10 20
STATUTE MILES
0 10 20
KILOMETERS
NORTH
EXPLANATION
MOB/DAA
DDA
STUDY AREA
Ragland
Grady
Broadview
Forrest
Mc Alister
House
1ST STANDARD PARALLEL NORTH
CURRY
NORTH SECTION
Ranchvale
Taiban
Tolar
Melrose
St Vrain
Grier
Gallaher
CLOVIS
CANNON AFB
PROPOSED EXPANSION OF MELROSE AIR FORCE RANGE
MOB/DAA
MELROSE AIR FORCE RANGE
CENTRAL (WEST) SECTION
Cameo
NEW MEXICO BASE LINE
27
28
30
31
32
35
Floyd
Bethel
Portales
PREFERRED IOC AREA
Tinsley Crossing
Delphos
Kermit
Rogers
ROOSEVELT
Dora
Littlefield
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CANNON AFB, NEW MEXICO
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEW MEXICO
30 NOV 81
FIGURE 4-17

federal highway. The North Section was originally proposed as the IOC area. A field reconnaissance of the potential IOC areas was performed by the OBTS working group from 2 to 5 June 1981. The results of this field evaluation are presented in Table 4-7. After evaluating the proposed sites, the Central Section was selected as the preferred site. Various conceptual layouts were performed in the central area using both the sectional land and open land layout approach. A preferred IOC area adjacent to the Melrose Air Force Range was delimited (Figure 4-18).

The second phase consisted of applying the 27 May 1981 OBTS/DTA siting requirements at a regional scale. The geotechnically suitable area is that suitable area presented in the DEIS (U.S. Department of the Air Force, 1980) and is based on the results of the Intermediate Screening (Fugro National, Inc., 1977). Within this geotechnically suitable area, the 4-mile (6-km) standoff requirement was applied. Only three areas remained with sufficient space to site the OBTS/DTA. The largest of the potential sites was the area selected for placing the IOC. The other two sites are shown in Figure 4-18. The western site (CA1) is in the Central Section, and the southern site (CA2) is in the South Section. A site-specific evaluation was performed, and the suitability of the sites reconfirmed (Appendix A-21 through A-24). MOB coordination and interaction with EDAW was established prior to site selection.

CANNON AFB, NEW MEXICO IOC AREA

North Section (Alternate 2)	Central (West) Section (Preferred)	South Section (Alternate 1)
Pros	**Pros**	**Pros**
• Closest proximity to DAA	• Less active farming - more grazing land - fewer homes • DTN does not need to cross railroad lines	• Potential aggregate source igneous dike exposures
Cons	**Cons**	**Cons**
• Highest potential for shallow caliche layers - closest proximity to the cap rock • Intense farm agriculture • Highest density of houses (also abandonments) • Higher potential for utility relocations • DTN must cross railroad from DAA to DDA	• Potential for shallow caliche layers • Potentially higher environmental concerns	• Potential for shallow caliche layers - farthest area from cap rock • DTN must cross railroad from DAA to DDA
No Impact	**No Impact**	**No Impact**
• Present IOC clusters 8, 9, and 10 are under Melrose Range restricted air space	• Presently vegetated stable dunes in area	• Eastern portion is actively dry-farmed, some grazing • Fewer homes - lower population density than in north section

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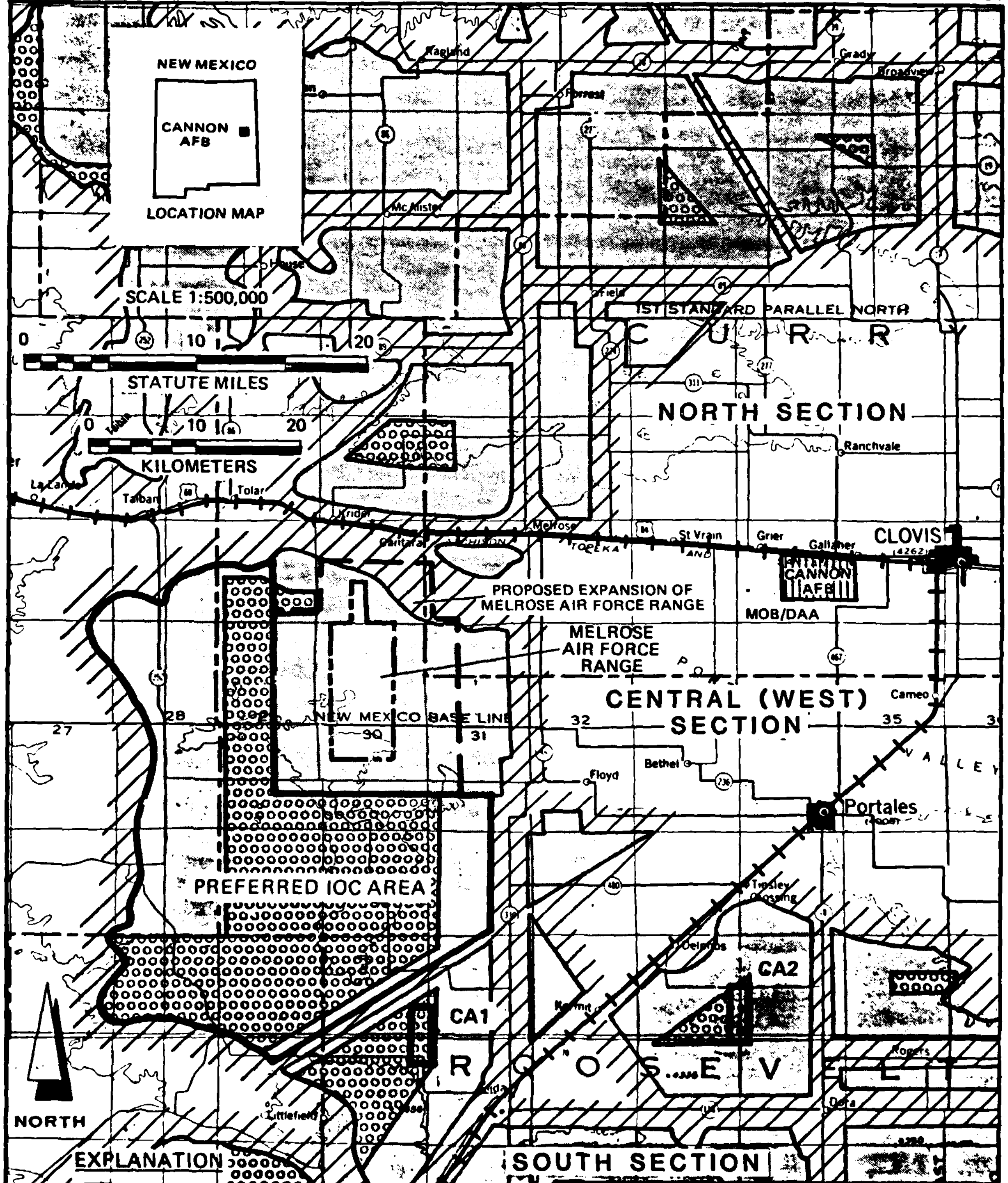
IOC SITING EVALUATION
CANNON AFB, NEW MEXICO
OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEW MEXICO

30 NOV 81

TABLE 4-7



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OPERATIONAL EXCLUSIONS AND OBTS/DTA OPTIONS CANNON AFB, NEW MEXICO
OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEW MEXICO

30 NOV 81

FIGURE 4-18

4.4.2 Conceptual Layouts

Various OBTS and DTA layouts as well as the DTN alignments between the MOB/DAA and the OBTS/DTA within the new site-specific areas, were performed. The layouts developed at Option CA1 used the HSSs in the center of the section conceptual OBTS/DTA layout (Figure 3-2). The use of the existing roads was maximized. To avoid a large surface depression of unknown origin, the OBTS and the DTA were separated more than usual. The DTN from the OBTS/DTA used existing roads, and this minimizes the distance to the IOC DTN.

In Option CA2, the HSSs were located on the section lines. For this case, the configuration maximizes the use of the existing road network and impacts the farm lands within the individual sections to a lesser degree. The DTN length was minimized consistent with maximum use of existing roads between the OBTS/DTA and the IOC DTN. All DTN routes attempted to bypass existing communities. There are numerous residences along all proposed DTN routes.

After developing the siting area and layouts, the OBTS/DTA locations were evaluated against the siting requirements to select the preferred and alternate site. The preferred site selected represents the optimal site and DTN route. The CA1 site near the IOC was determined to be preferred, while CA2 was selected as the alternate OBTS/DTA for Cannon AFB. Comparison of the respective sites is presented in Table 4-8.

CANNON AFB, NEW MEXICO OBTS/DTA

Preferred – Option CA1

Pros

- 1 mile to gas pipeline
- 4 miles to State Highway 330
- Close to proposed IOC location
- Railroad crossing not required

Cons

- 44 miles to DDA
- Proximity to Melrose Air Force Range
- Potentially more environmental impact (rangeland)

Alternate – Option CA2

Pros

- 23 miles to DAA
- 4 miles to railroad
- 4 miles to State Highways 18 and 116

Cons

- Must cross railroad
- More populated area
- High agricultural activity

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PREFERRED VS ALTERNATE OBTS/DTA OPTION EVALUATION CANNON AFB, NEW MEXICO

OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEW MEXICO

30 NOV 81 TABLE 4-8

4.5 FIELD SURVEYS

After the development of the layouts, areas for field environmental surveys and geotechnical inspections were established for the preferred and alternative layouts and respective DTNs. These areas include a 1/4-mile (.4-km) buffer around the facilities. The field surveys were performed at four OBTS sites; one at the Coyote Spring MOB, Nevada, one at the Beryl MOB, Utah, and two at the Milford MOB, Utah. An alternate OBTS at the Beryl MOB and two OBTSs near Cannon AFB, New Mexico, MOB were not surveyed because permission to enter onto private land at these sites had not been obtained at the time of the field surveys.

Biological resources surveys and geotechnical inspections were also made along one road corridor from the Coyote Spring MOB to the OBTS and along one OBTS road from the Beryl MOB. The other OBTS road connections could not be surveyed because authorization to enter private land was not granted at the time of the field surveys.

Preliminary results of the studies indicated that the OBTS sites in Nevada and Utah and the DTN segments which were studied were environmentally and geotechnically acceptable.

The Nevada-Utah field inspections were performed on 17 through 19 September 1981. During the inspections, the following was observed.

- At Coyote Spring OBTS/DTA site (Option C1) no serious geotechnical problems were observed; although drainage structures would be required where the DTN for the OBTS crosses

the Pahranagat Wash. Some sheet wash could occur in the general area.

- For the preferred Beryl OBTS/DTA site (Option B2A) various areas of topographic concern were noted in southern Hamlin Valley. Depending on the final layout configuration, both drainage crossings and considerable grading work would be required. However, sheet flooding does not appear to be a problem. The Table Mountain (Option B3) area did show signs of sheet flow across most of the site.

- The Milford OBTS/DTA area around "the Neck" (Option M3) is on alluvial fan deposits. There is some potential for sheet flow. The eastern side of the suitable area is formed by one main drainage. This drainage would require some drainage structures if the DTN were to cross it. Option M3A has a potential for shallow rock, as well as moderate caliche cementation at depth.

Unfortunately, it was not possible to complete the field surveys because of a stop work order issued on 14 October 1981. The directions were to compile data reflecting the status of the program as of 2 October 1981. These data have been compiled in an unfinished report (Ertec, 1981).

Although no surveys were performed in New Mexico, a second field reconnaissance took place on 24 and 25 September 1981. This trip evaluated the OBTS/DTA locations. Both the OBTS/DTA and their connecting DTNs were determined to be acceptable.

4.6 SITING COORDINATION

Beside the OBTS/DTA working group meetings, a series of data exchange meetings were held in order to support the tiered decision-making process. The environmental assessment contractor, coordinating with the AFRCE-MX, obtained from various contractors the available siting data on the Tier IIA facilities and alignments. These contractors were the base

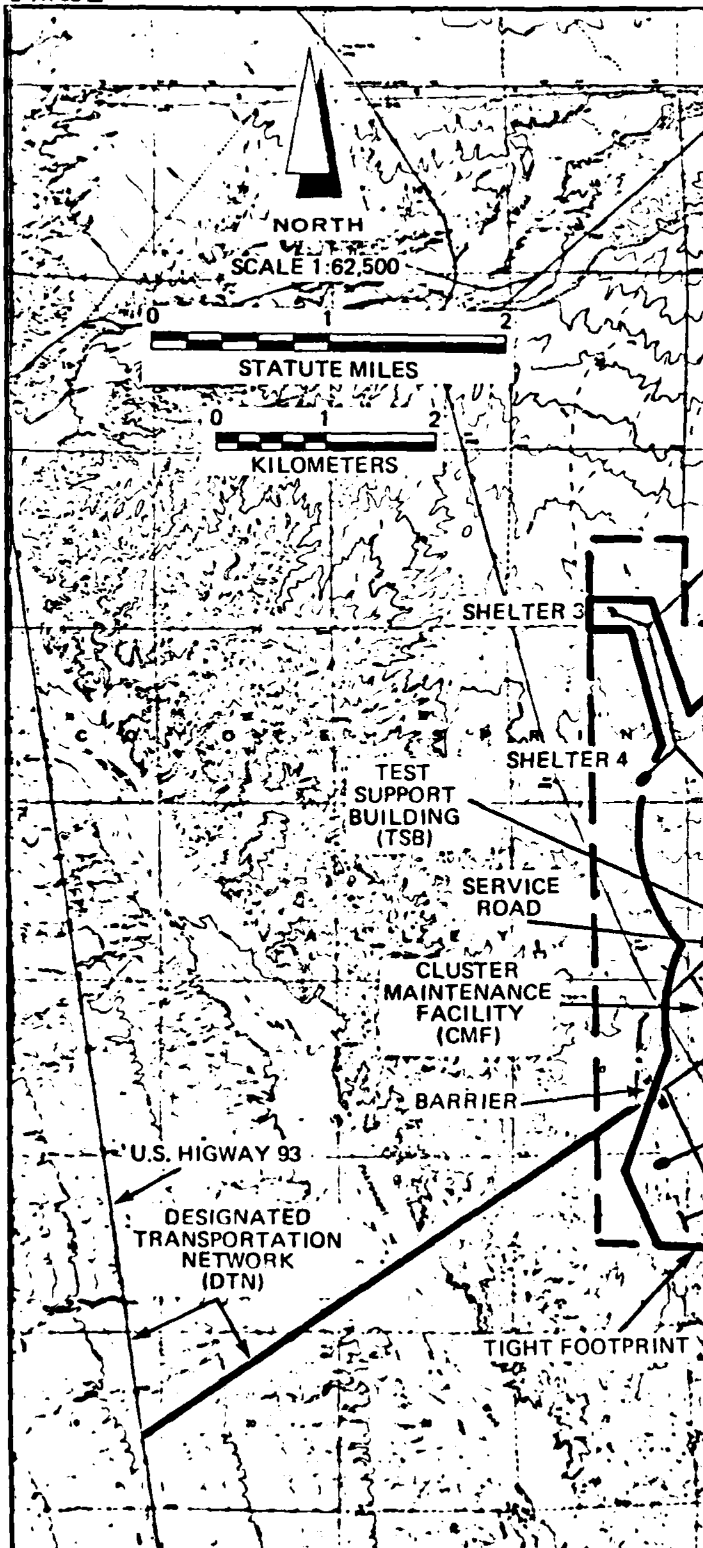
comprehensive planner (EDAW, Inc.), COE, and Ertec as the coordinator at the OBTS/DTA working group.

To support this process, the OBTS/DTA working group provided a series of deliverables to the environmental assessment contractor. The initial deliverable, dated 5 August 1981, contained footprints of the preferred and alternate OBTS/DTA areas with layouts and the DTN access roads. The final deliverable, dated 3 September 1981, contained land acquisition parcels developed from the footprints and the preliminary environmental survey and geotechnical inspection data. Final analysis and completion of a report were suspended as a result of a stop work order.

4.7 LAND ACQUISITION APPLICATION PACKAGE

As part of the land acquisition application package, the preferred and alternate layouts were used to develop areas to be withdrawn for construction. These were the same layouts used for tiering. To determine the land acquisition area, quarter-sectional limits were depicted around a tight footprint for each layout. Figure 4-19 illustrates the land acquisition boundary development around a tight footprint for the southern Coyote Spring layout.

These parcels were depicted on "E" size map sheets at a scale of 1:62,500 for each combination of preferred and alternate MOB and OBTS option (17 September 1981). The parcels were also described by township, range, and quarter section. These depicted and described parcels were then included in the land



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EXAMPLE LAND PARCEL
BOUNDARY DEVELOPMENT

OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81 FIGURE 4-19

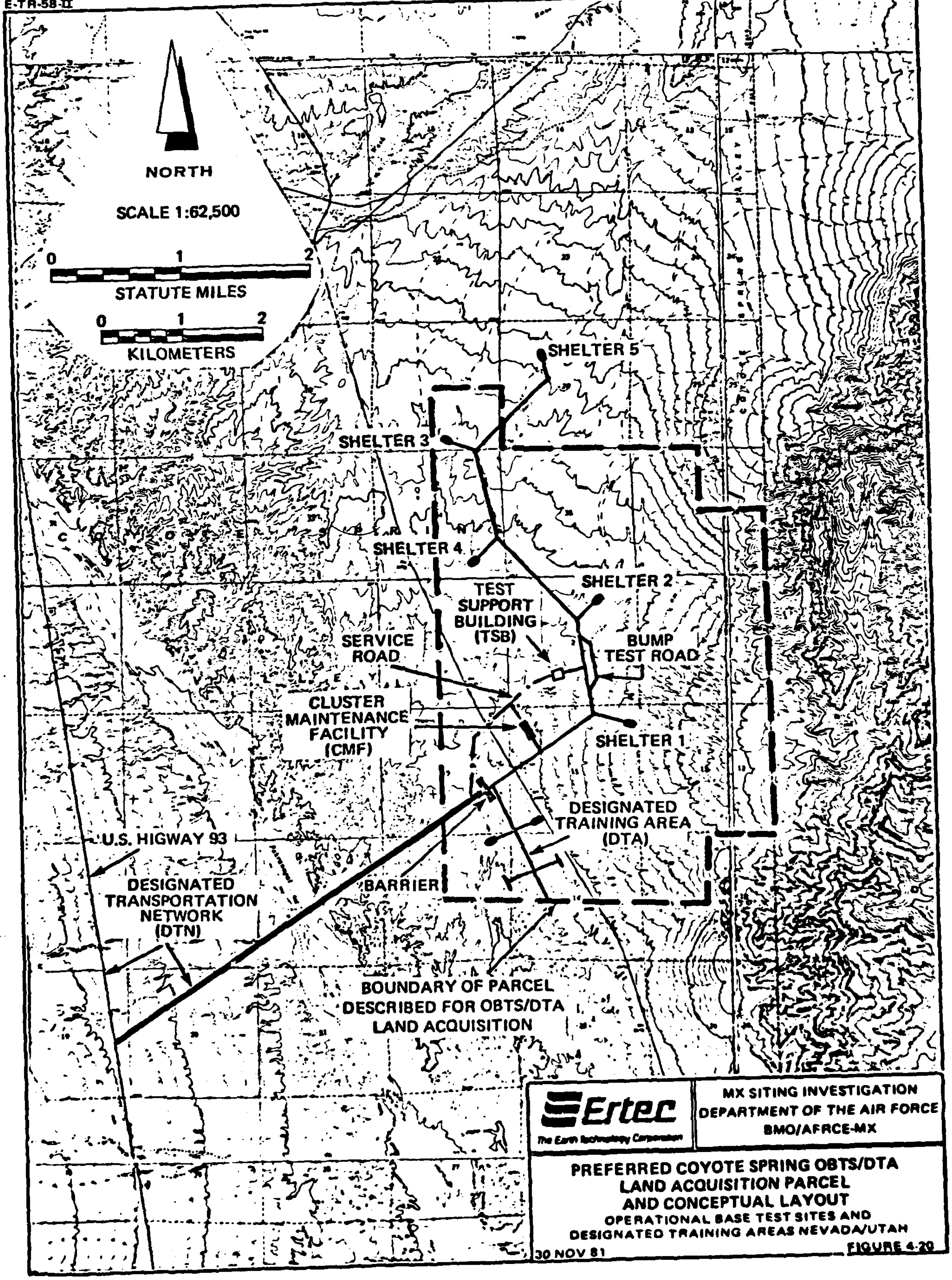
acquisition application package. Figures 4-20 and 4-21 and Table 4-9 are presented as an example of this product. (See Appendix B and C for parcels and descriptions of the other sites). The first increment of the Land Acquisition Package is presented in Volume III. The DTN routes and the OBTS/DTA site relationship to the MOB/DAA is depicted in Figures 4-22 and 4-23 for Nevada and Utah, respectively.

The New Mexico area was not included in the land acquisition application package, but similar quarter-sectional boundaries were developed around the layouts used for tiering (see Appendix B-9 and B-10). The descriptions of the parcel boundaries were also part of the tiering deliverable (see Appendix C-4). The DTN routes and the OBTS/DTA site relationship to the MOB/DAA are depicted in Figure 4-24.

4.8 LAYOUTS AT 1.73-MILE SPACING

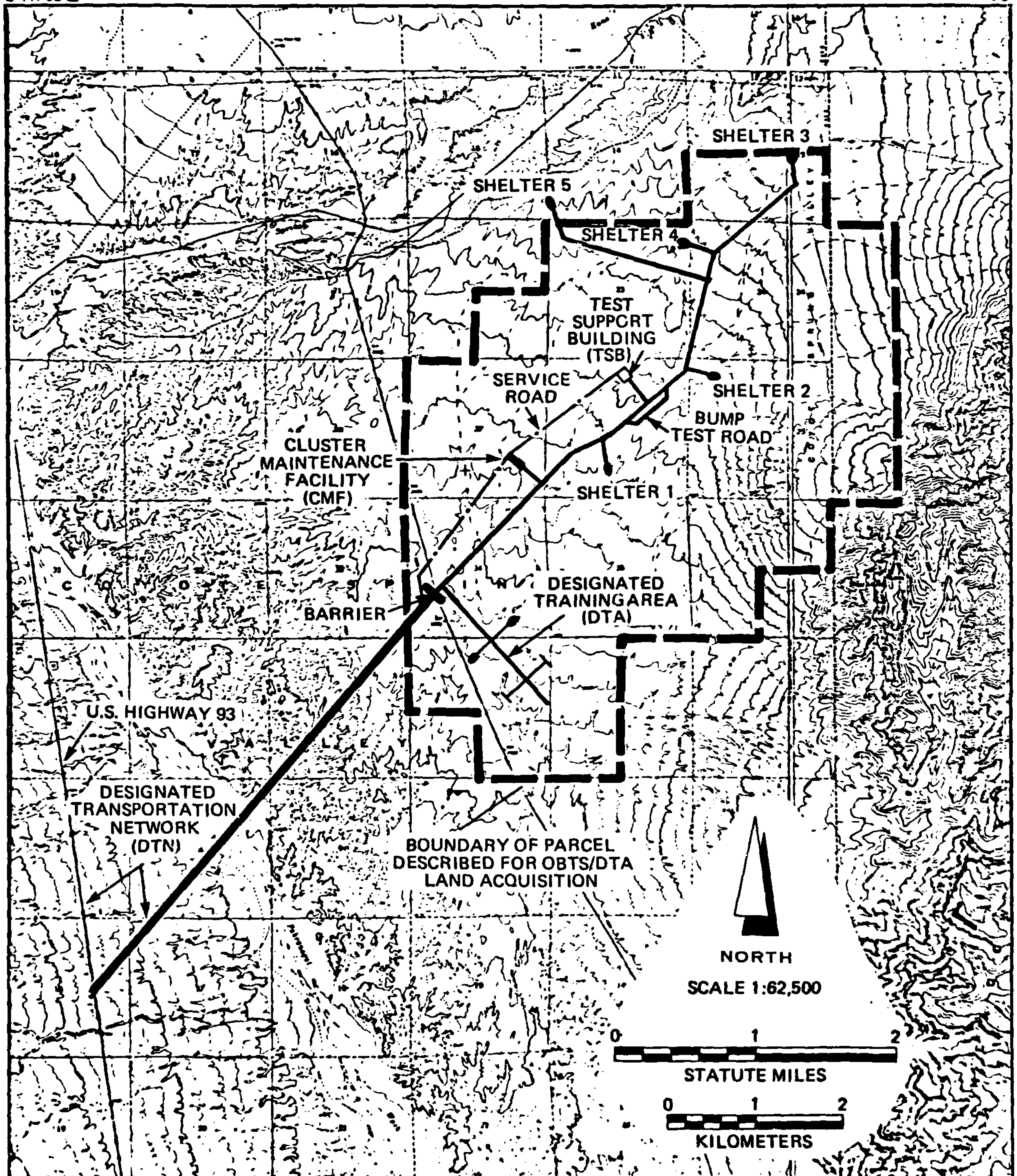
An alternate layout option using a 1.73-mile (2.78-km) spacing was performed to determine if this layout could exist within the area designated for land acquisition. For example, at the Coyote Spring site (Option C1), only an extra 1/4-mile (.4-km) area would be necessary to completely contain this larger layout (Figure 4-25).

The Beryl OBTS/DTA layout at the south Hamlin Valley preferred site (Option B2A) was successfully sited within the land acquisition area. The area within the Table Mountain alternate site (Option B3) was marginal prior to this study. The



PREFERRED COYOTE SPRING OBTS/DTA LAND ACQUISITION PARCEL AND CONCEPTUAL LAYOUT
OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81 FIGURE 4-20



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ALTERNATE COYOTE SPRING OBTS/DTA LAND ACQUISITION PARCEL AND CONCEPTUAL LAYOUT

OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH

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FIGURE 4-21

COYOTE SPRING, PREFERRED SITE

Lincoln County, Nevada
T.11S.R.63E.
Section 27, SE 1/4
Section 34, E 1/2
Section 35, All
Section 36, S 1/2 and NW 1/4

SUBTOTAL	1600 Acres

T.12S.R.63E.
Section 1, All
Section 2, All
Section 3, E 1/2
Section 10, E 1/2
Section 11, All
Section 12, All
Section 13, NW 1/4
Section 14, N 1/2
Section 15, NE 1/4

SUBTOTAL	3840 Acres
TOTAL	5440 Acres

COYOTE SPRING, ALTERNATIVE SITE

Lincoln County, Nevada
T.11S.R.63E.
Section 13, S 1/2
Section 22, SE 1/4
Section 23, All
Section 24, All
Section 25, All
Section 26, All
Section 27, All
Section 34, All
Section 35, All
Section 36, N 1/2 and SW 1/4

SUBTOTAL	5440 Acres

T.12S.R.63E.
Section 2, W 1/2
Section 3, E 1/2 and NW 1/4

SUBTOTAL	800 Acres

T.11S.R.64E.
Section 19, W 1/2
Section 30, W 1/2

SUBTOTAL	640 Acres
TOTAL	6880 Acres

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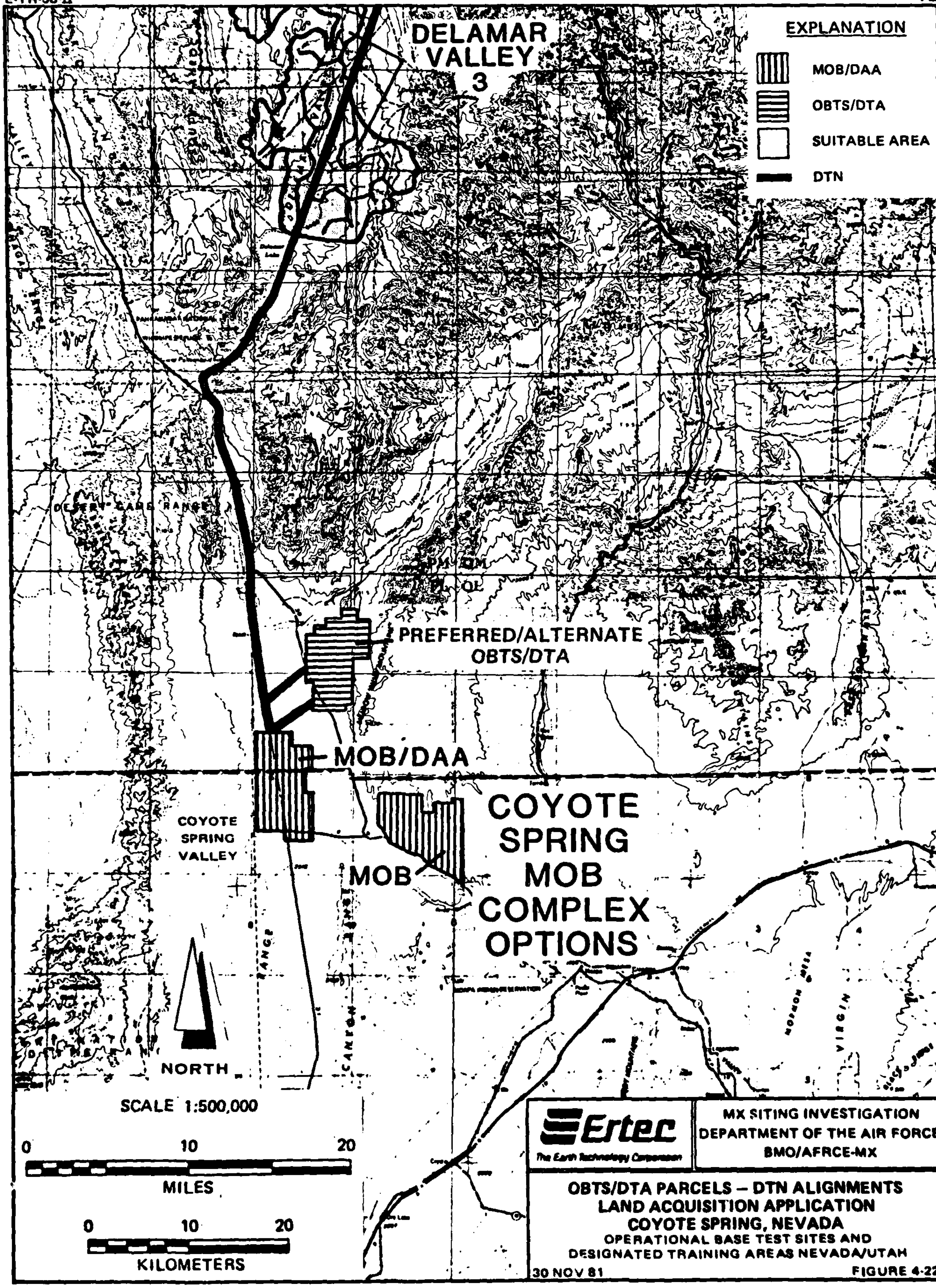
COYOTE SPRING, NEVADA
OBTS/DTA LAND PARCEL DESCRIPTION

OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81 TABLE 4-9



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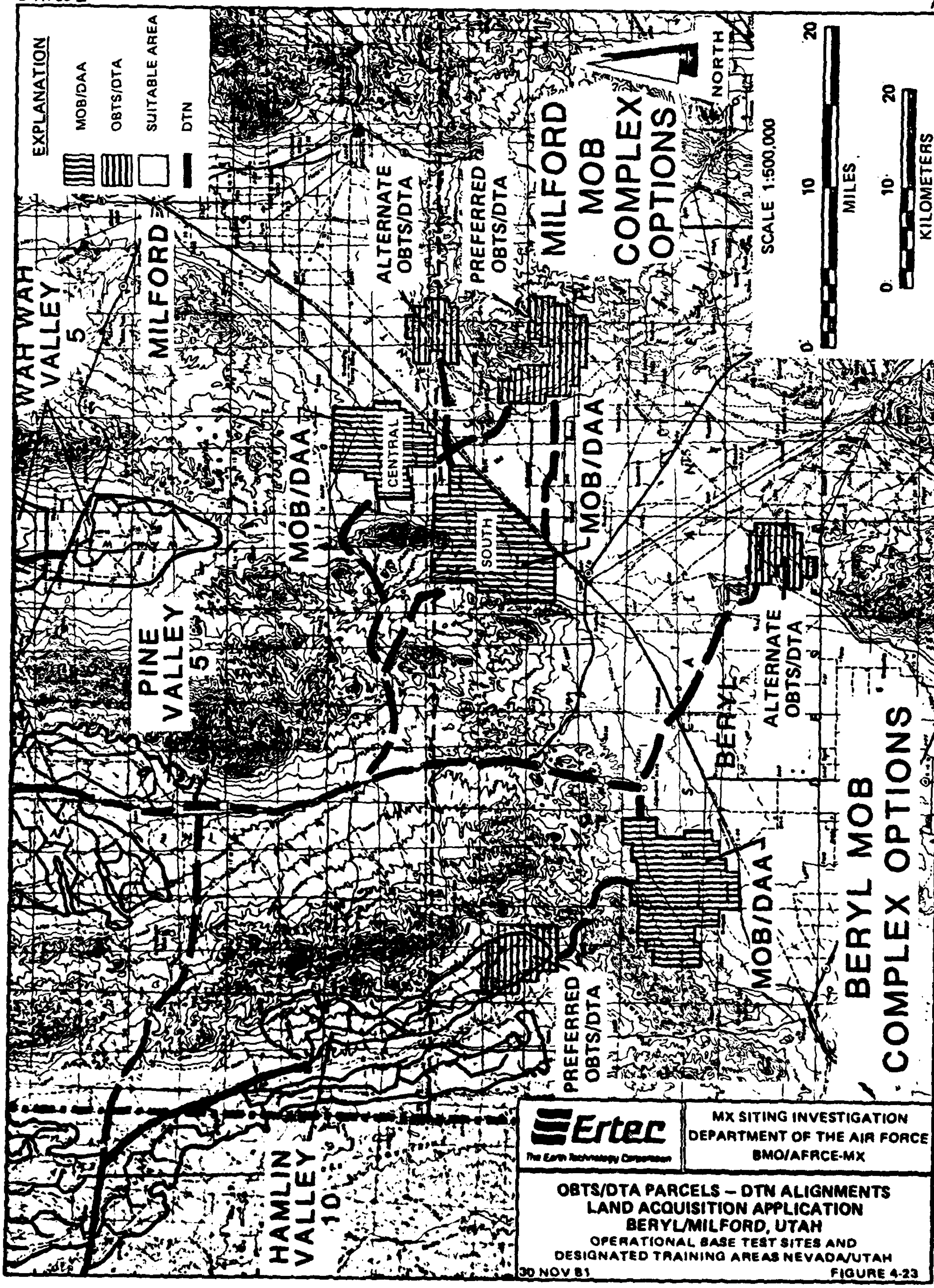
OBTS/DTA PARCELS – DTN ALIGNMENTS
LAND ACQUISITION APPLICATION
COYOTE SPRING, NEVADA
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

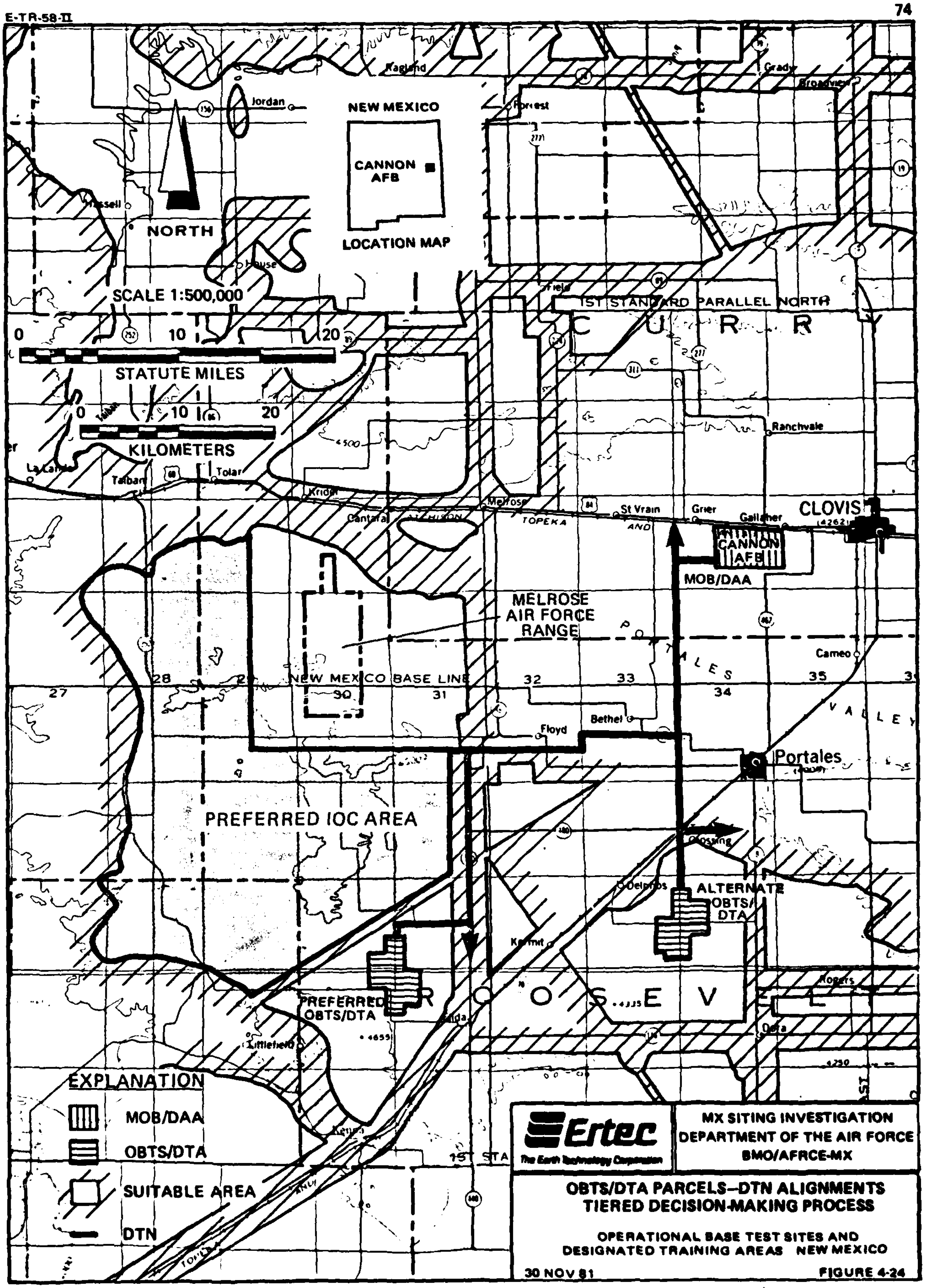
30 NOV 81

FIGURE 4-22



OBTS/DTA PARCELS – DTN ALIGNMENTS
LAND ACQUISITION APPLICATION
BERYL/MILFORD, UTAH
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

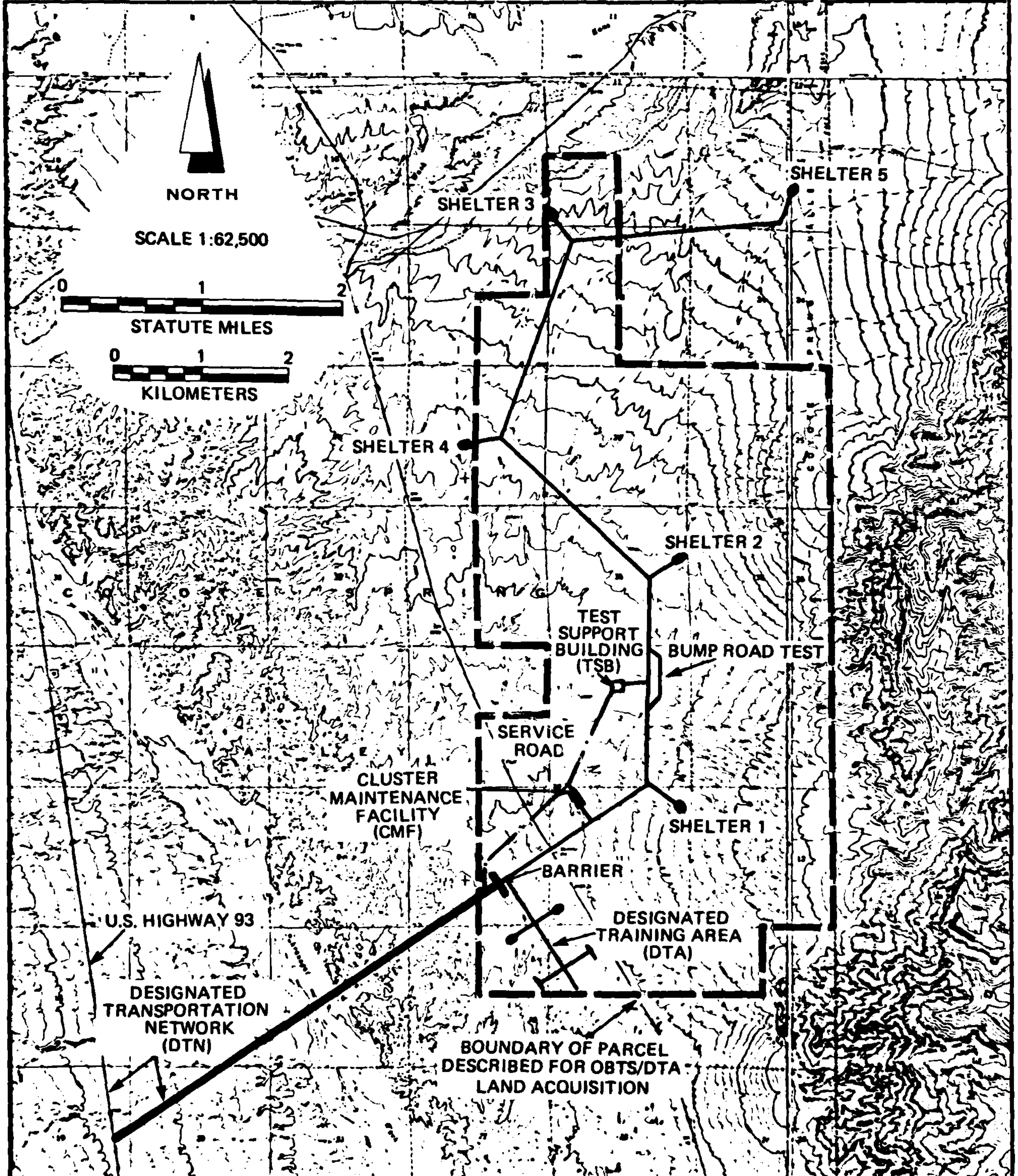
30 NOV 81 FIGURE 4-23



OBTS/DTA PARCELS—DTN ALIGNMENTS TIERED DECISION-MAKING PROCESS

OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEW MEXICO

30 NOV 81 FIGURE 4-24



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EXAMPLE OF OBTS/DTA CONCEPTUAL LAYOUT (1.73-MILE SPACING) COYOTE SPRING, NEVADA

OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81 FIGURE 4-26

enlarged layout using any configuration could not fit within the size constraints of the suitable area.

Enlarged layouts were attempted within the Milford OBTS/DTA areas designated for land acquisition. The preferred layout at "the Neck" (Option M3) was totally within the land acquisition area. The alternate Option M3A could not fit within the suitable area for this site regardless of the configuration.

Conceptual layouts at 1.73-mile (2.78-km) spacing were not performed for any option in New Mexico.

5.0 CONCLUSIONS

The OBTS/DTA objectives were generally accomplished as follows:

- o Establish suitable areas;
- o Develop conceptual layouts;
- o Perform field reconnaissance trips;
- o Determine preferred and alternate OBTS/DTA layouts and DTN alignments and produce parcel descriptions; and
- o Depict sites and alignments and other descriptions in the land acquisition application package.

The OBTS/DTA siting evaluations resulted in operationally, geotechnically, environmentally, and geographically acceptable locations in which to produce conceptual layouts for each of the four MOB/DAA options. Conceptual layouts using both open and sectional land options, as appropriate, were developed for all sites. These layouts were reviewed and accepted by BMO/AFRCE-MX. Field reconnaissance trips were taken to all sites and field observations noted.

Based on the above evaluations, the recommended preferred and alternate layouts, site parcels, and road alignments were determined. Also, parcel descriptions for each site were produced. Environmental surveys and geotechnical inspections were performed at the Nevada-Utah sites except the Beryl alternate and the Coyote Spring alternate DTN route. These data were provided to the environmental assessment contractor in support of the tiering process.

The same preferred and alternate parcels and alignments in Nevada-Utah were also depicted on "E" size map sheets for each individual OBTS/DTA and MOB/DAA option combination. These maps, along with the parcel descriptions, were delivered to the AFRCE-MX on 17 September 1981 as the first increment of the land acquisition application package. Data for New Mexico were not part of this package.

Due to the termination of the MPS basing mode by President Reagan, various follow-on activities were not performed. These activities include the finalizing of the environmental field surveys and geotechnical inspections evaluation and report, the performance of preliminary geotechnical field investigations to verify the depth to rock, the production of 1:9600 scale topographic maps, and the development of preconstruction conceptual layouts using the 1:9600 maps for each site.

6.0 REFERENCES CITED

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Ertec Western, Inc., 1981, DTN/OBTS field surveys, E-TR-59, October 1981, (as directed by a stop work order, this report was not completed).

Fugro National, Inc., 1980a, (1) Proposed operational base site, Coyote Spring and Kane Springs Valleys, Nevada; (2) proposed operational base site, Escalante Desert, Milford area, Utah; (3) proposed operational base site, Steptoe Valley, Ely area, Nevada; FN-TR-35, 15 May 1980.

__________, 1981a, Preliminary geotechnical investigation proposed operational base site, Coyote Spring Valley, Nevada, FN-TR-43, 23 December 1980.

__________, 1981b, Preliminary geotechnical investigation proposed OB site, Milford Utah, FN-TR-44, 20 February 1981.

__________, 1981c, Preliminary geotechnical investigation proposed OB site, Beryl, Utah, FN-TR-45, 27 March 1981.

__________, 1981d, Preliminary biological and cultural resources inventory and environmental evaluation of the proposed operational base sites in Coyote Springs Valley and Milford-Beryl area, FN-TR-46, 20 March 1981.

United States Department of the Air Force, 1980, Environmental impact analysis process, deployment area selection and land withdrawal acquisition, DEIS, 1 December 1980.

__________, BMO/AFRCE-MX 1980, Siting criteria for MX designated deployment area, 10 November 1980.

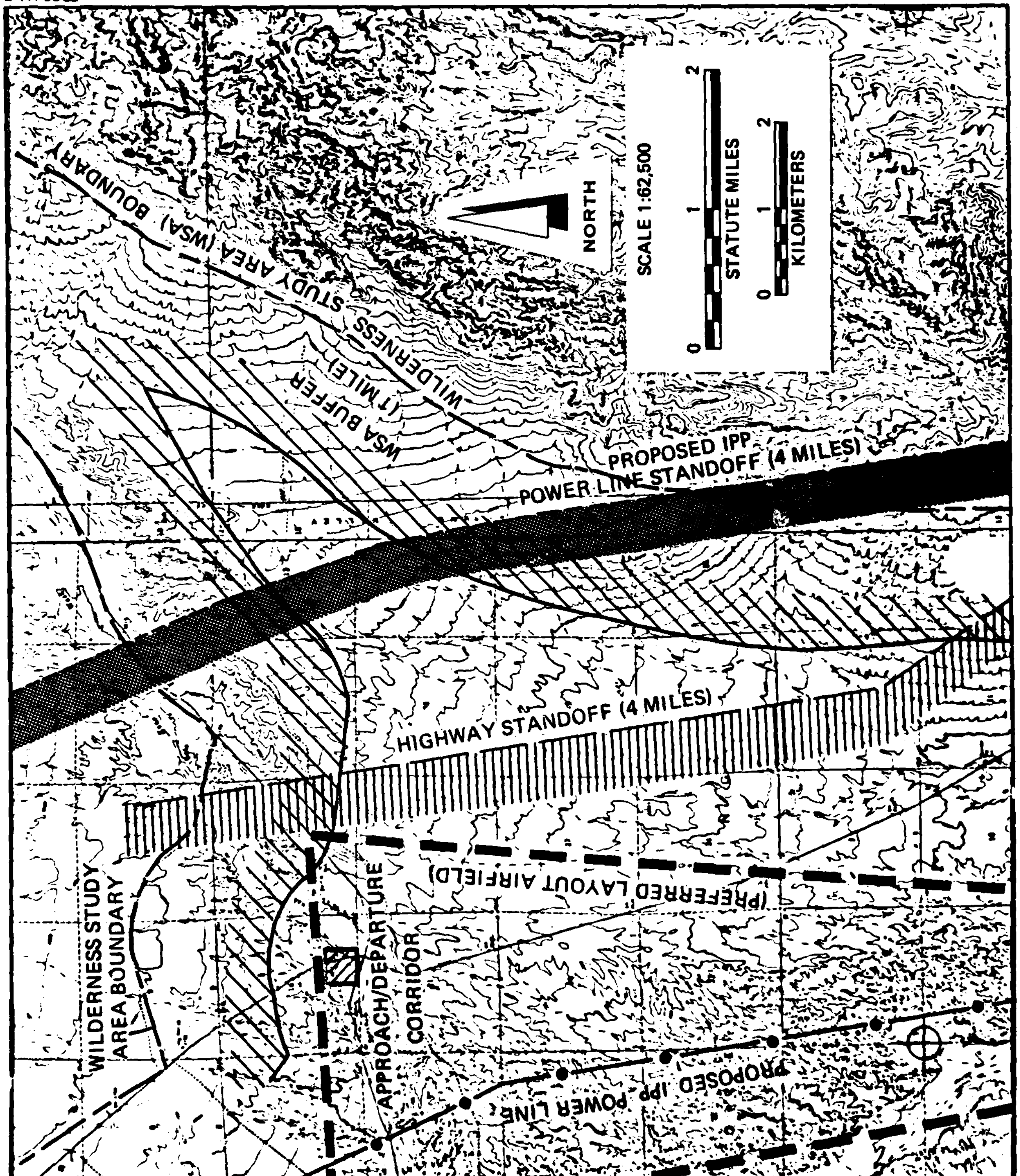
__________, BMO/AFRCE-MX, 1981a, Minutes of OBTS meeting, 22 April 1981.

__________, BMO/AFRCE-MX 1981b, Minutes of OBTS meeting, 27 May 1981.

__________, BMO/AFRCE-MX 1981c, Minutes of OBTS meeting 14 August 1981.

APPENDIX A

SITE-SPECIFIC TOPICAL OVERLAYS/SUITABLE AREA



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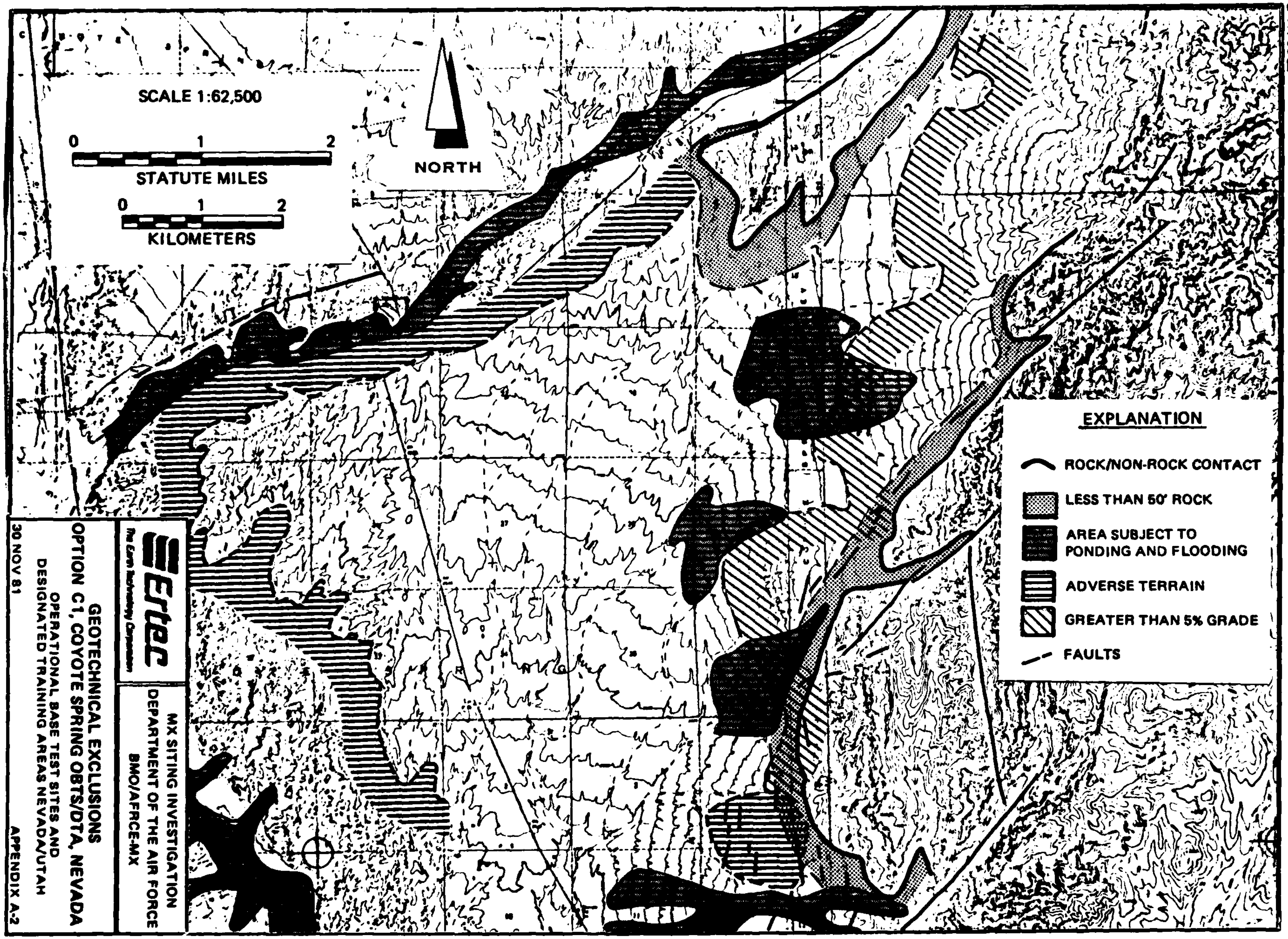
OPERATIONAL EXCLUSIONS
OPTION C1, COYOTE SPRING OBTS/DTA, NEVADA

OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81 APPENDIX A-1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2
STATUTE MILES
0
1
2
KILOMETERS
NORTH
EXPLANATION
ROCK/NON-ROCK CONTACT
LESS THAN 50' ROCK
AREA SUBJECT TO PONDING AND FLOODING
ADVERSE TERRAIN
GREATER THAN 5% GRADE
FAULTS
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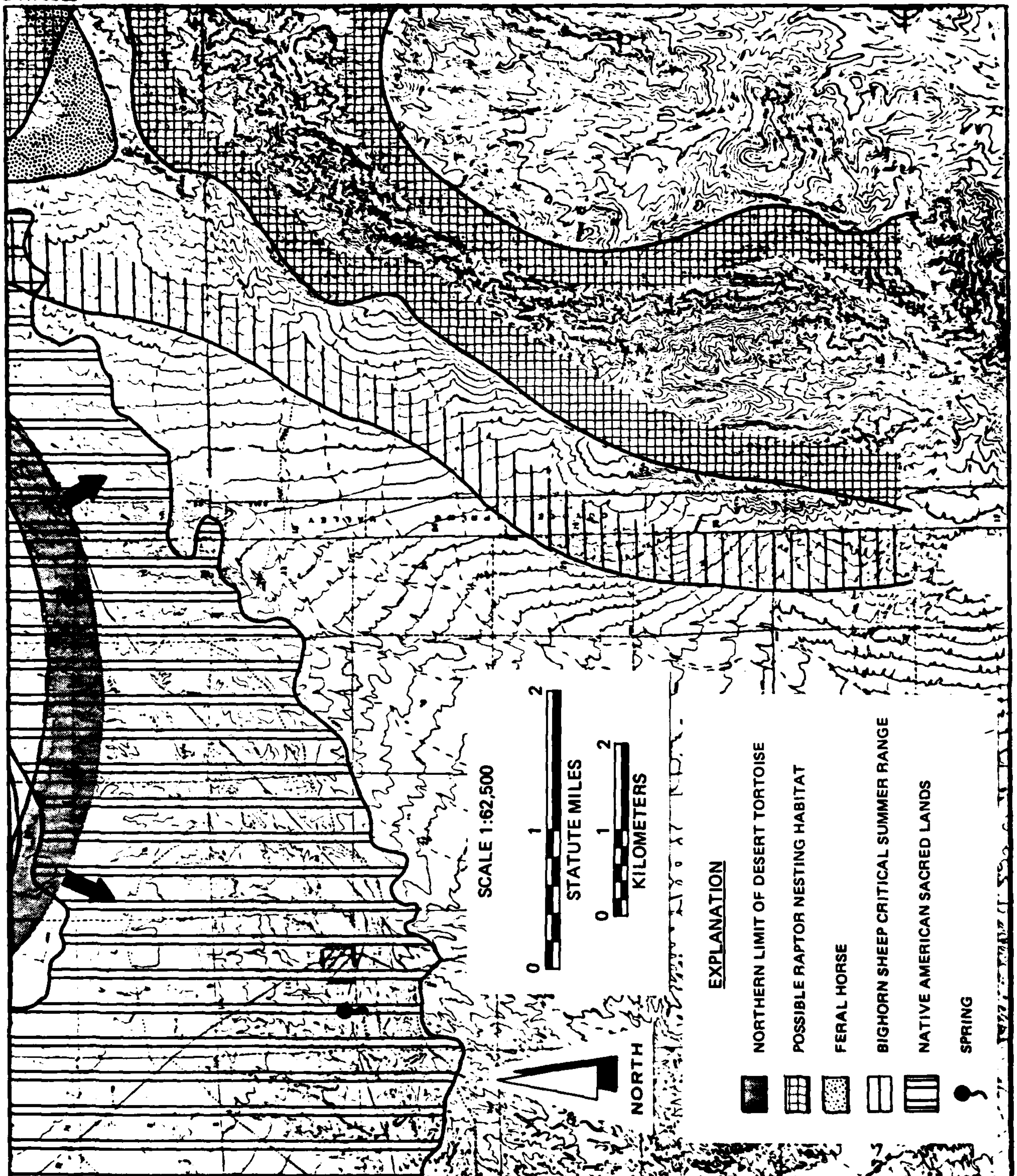
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
APPENDIX A-2



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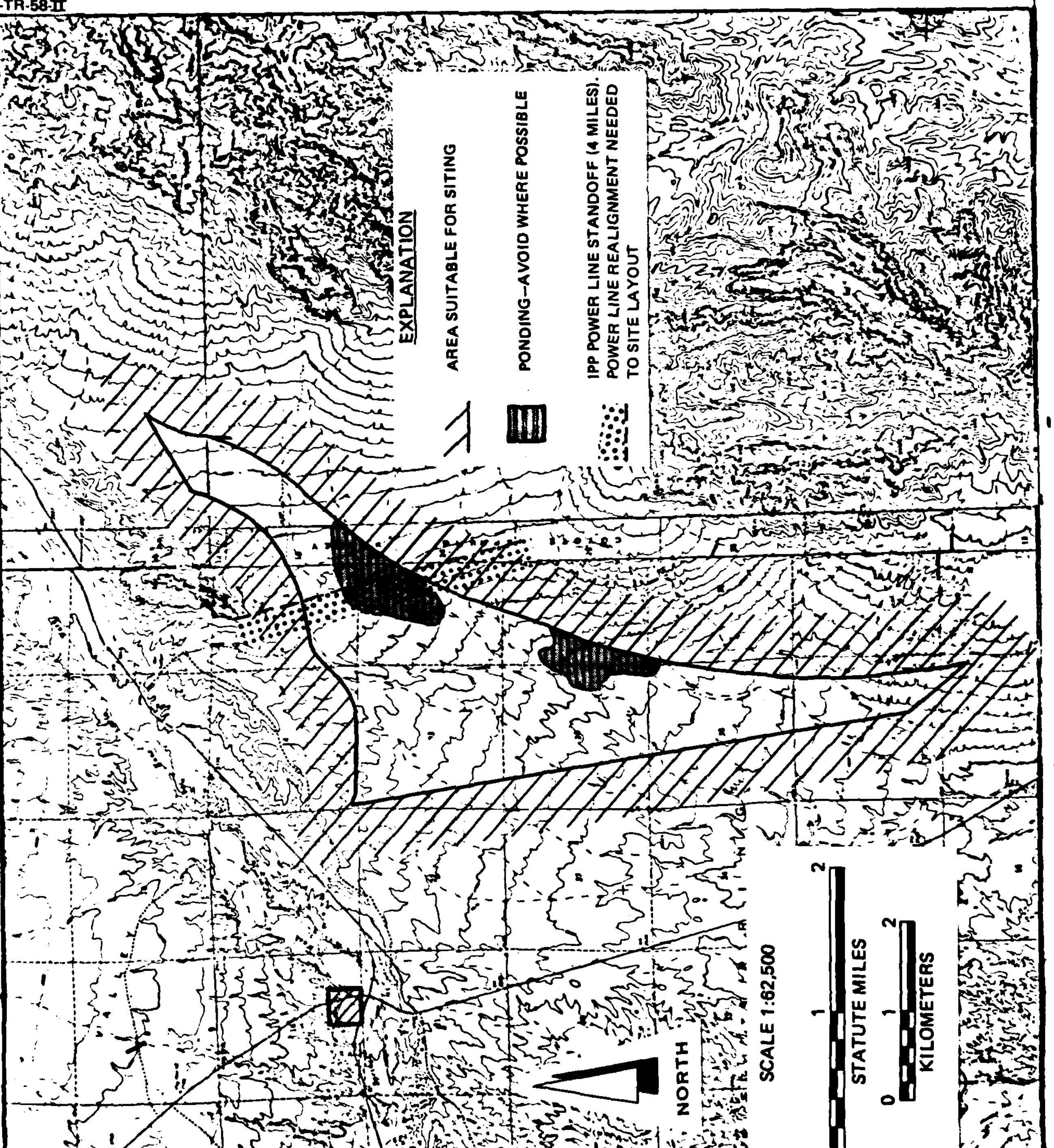
OPTION C1, COYOTE SPRING OBTS/DTA, NEVADA

OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81



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SUITABLE AREA
OPTION C1, COYOTE SPRING OBTS/DTA, NEVADA
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

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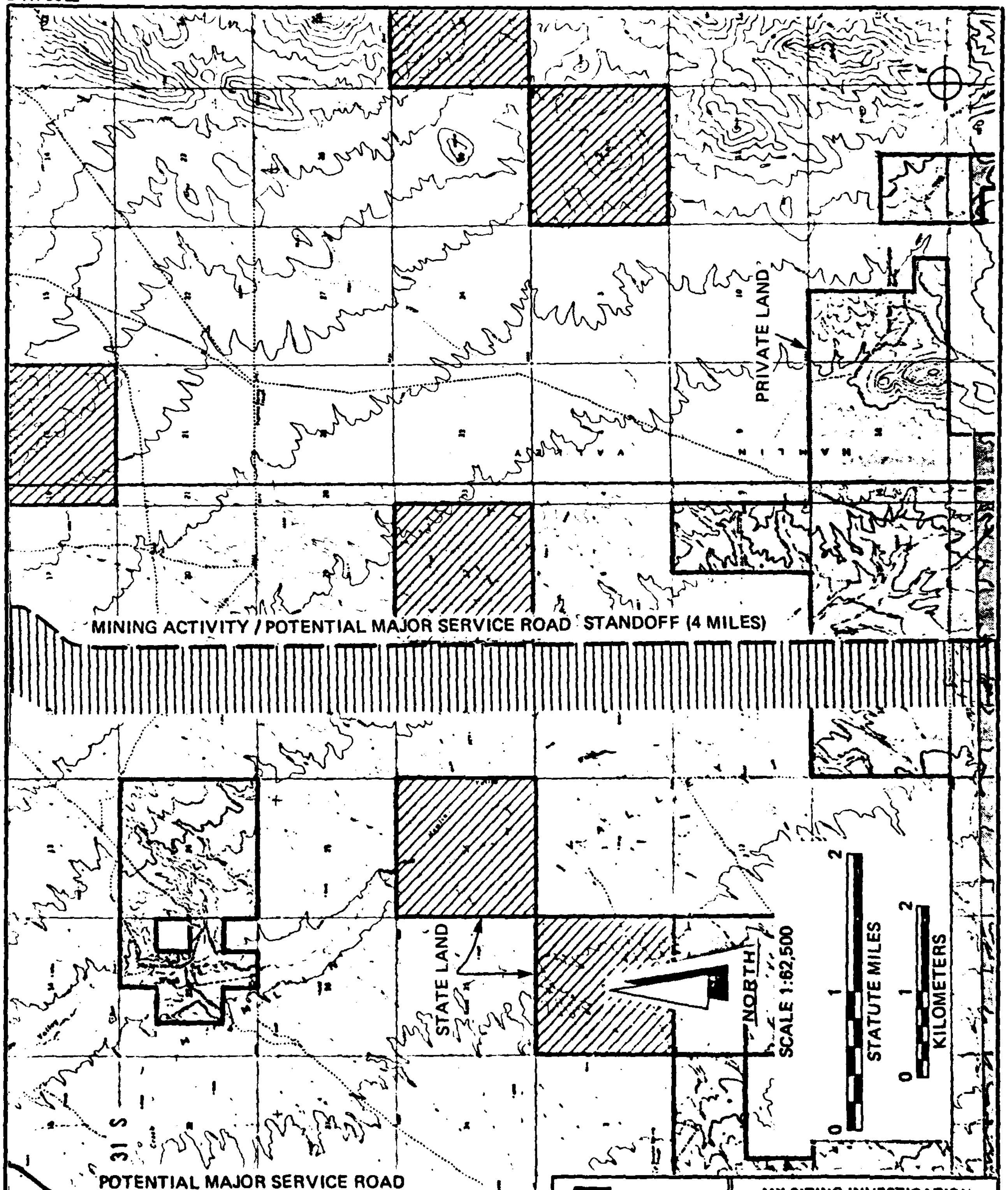

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OPTION B2A, BERYL OBTS/DTA, UTAH
OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH

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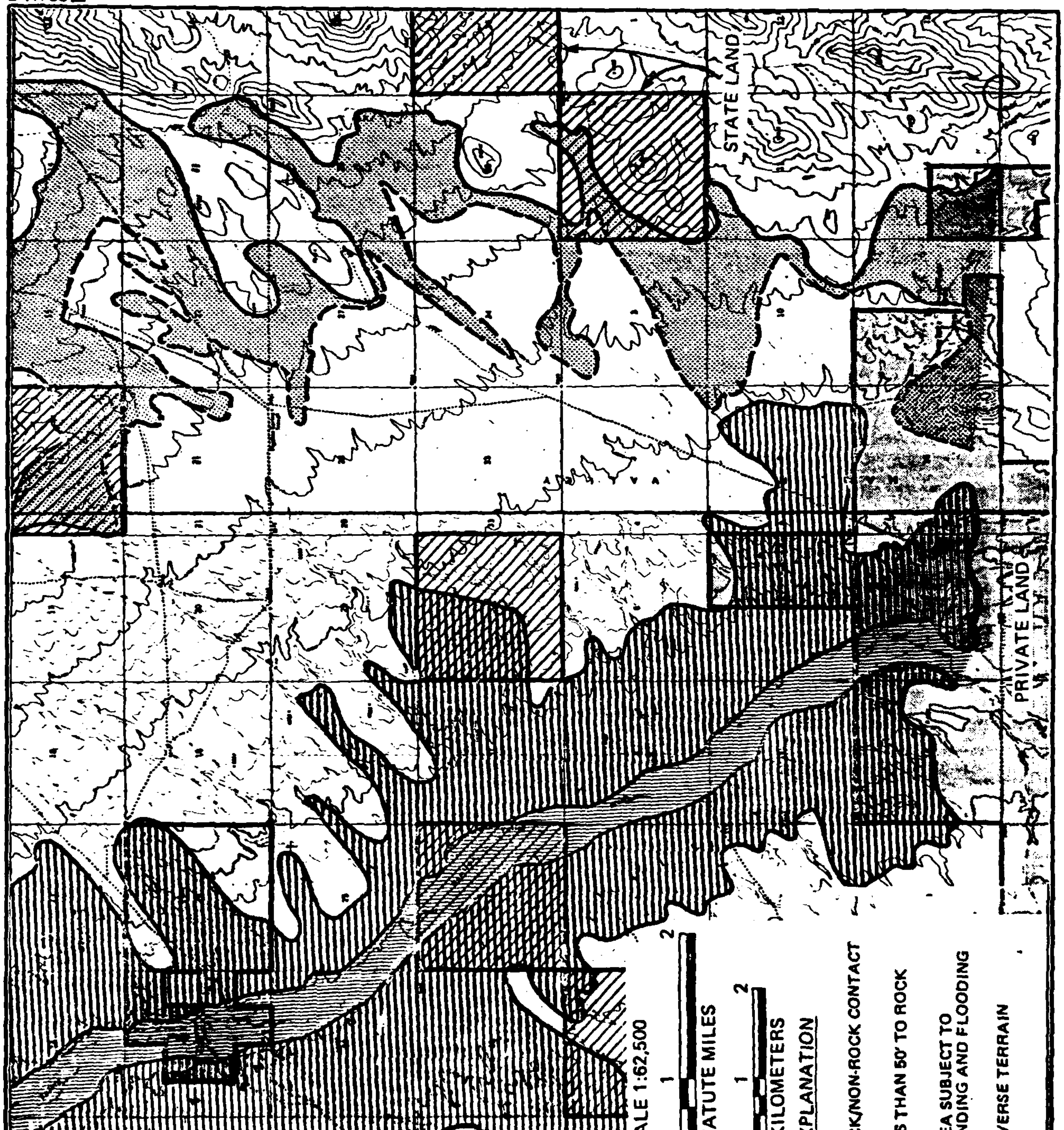

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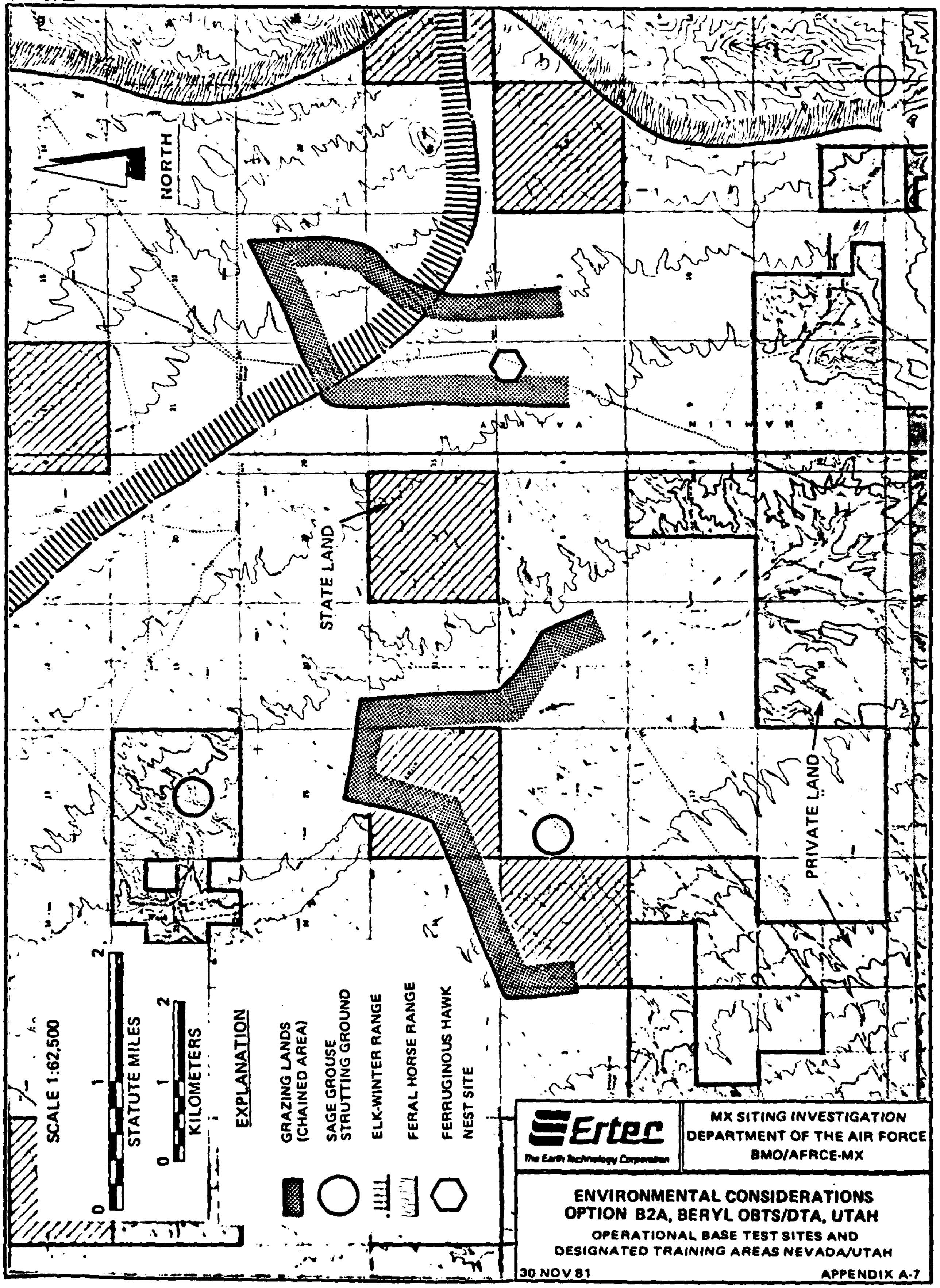
OPTION B2A, BERYL OBTS/DTA, UTAH
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81



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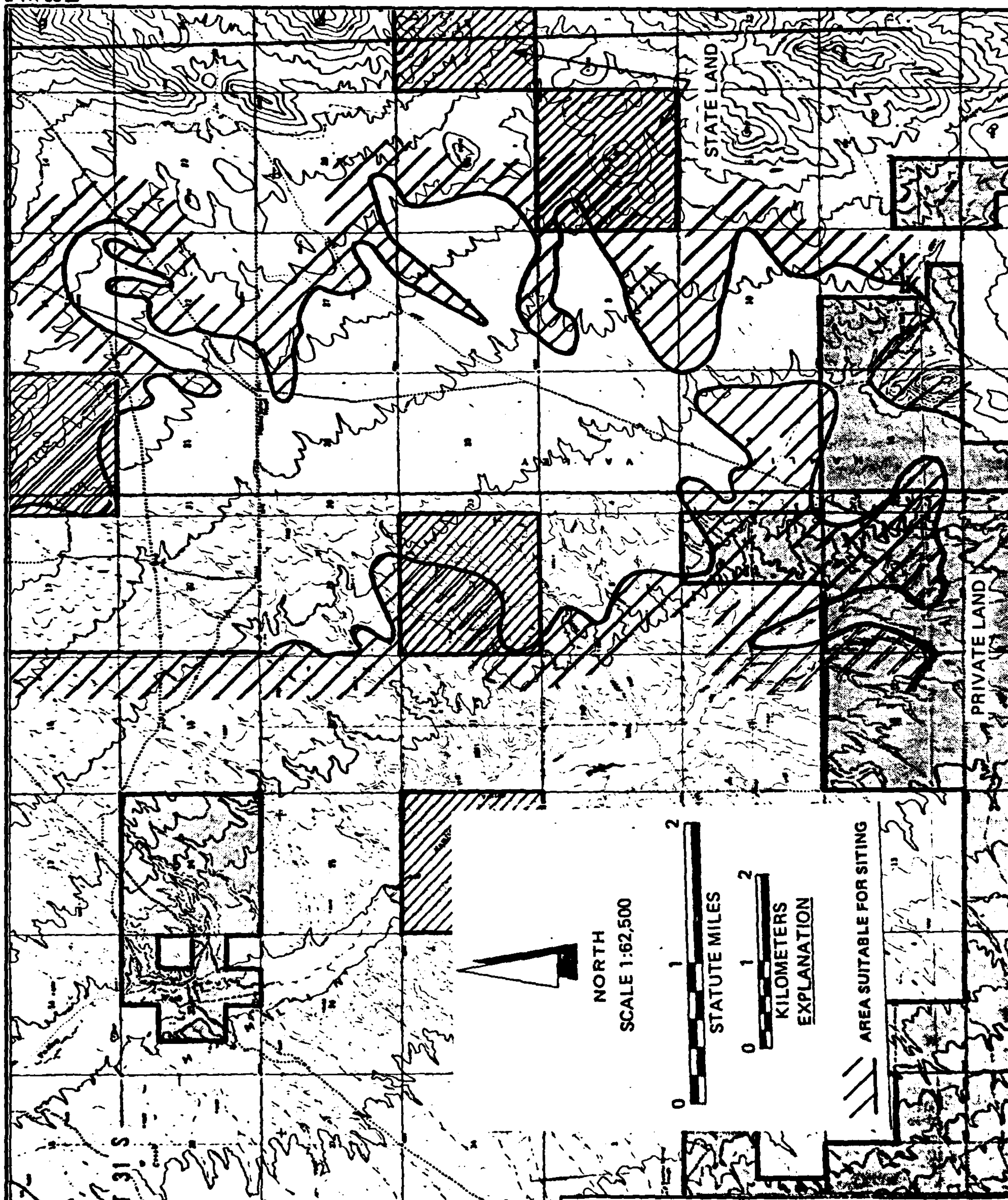
OPTION B2A, BERYL OBTS/DTA, UTAH

OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81

APPENDIX A-7



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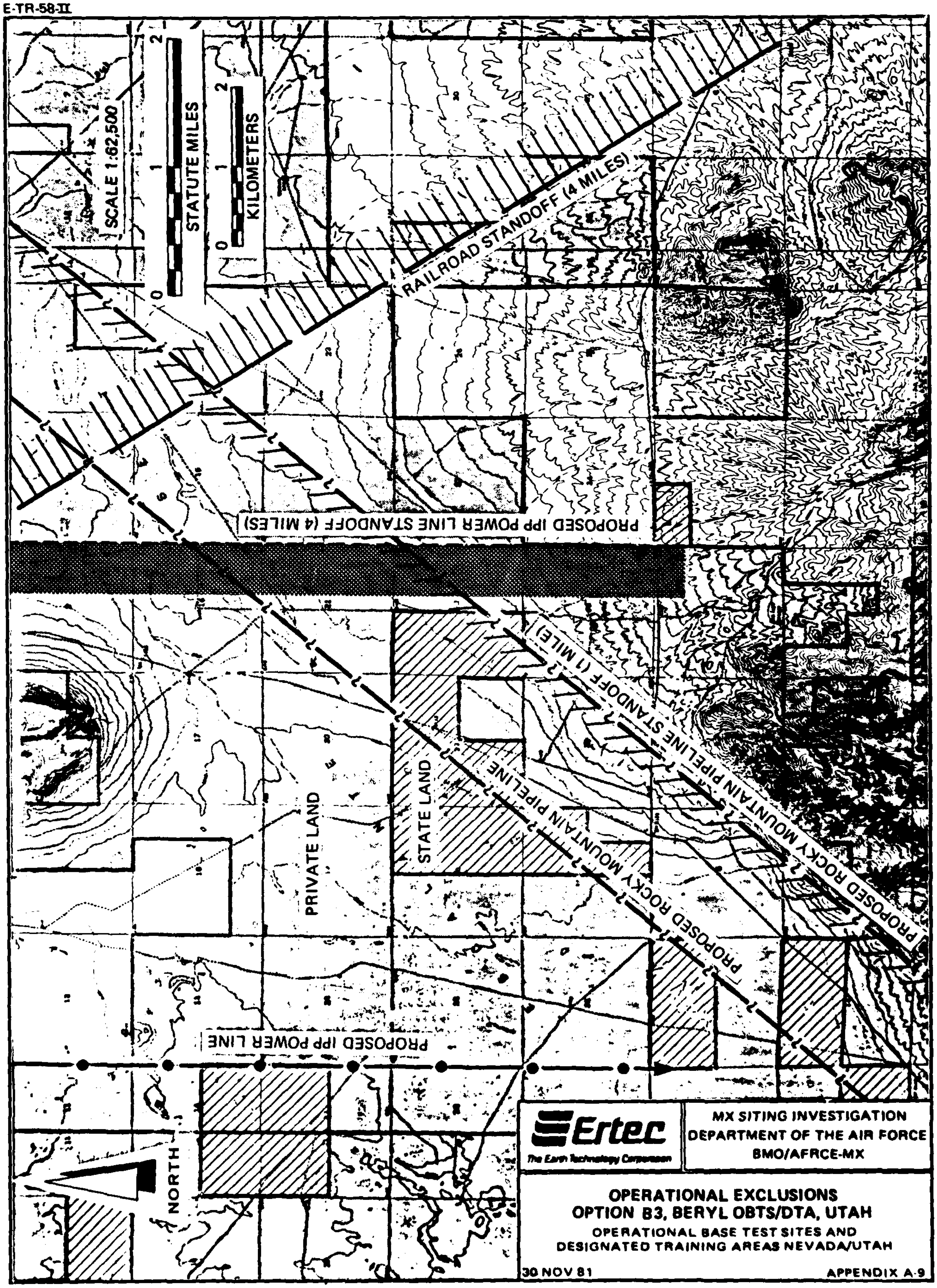
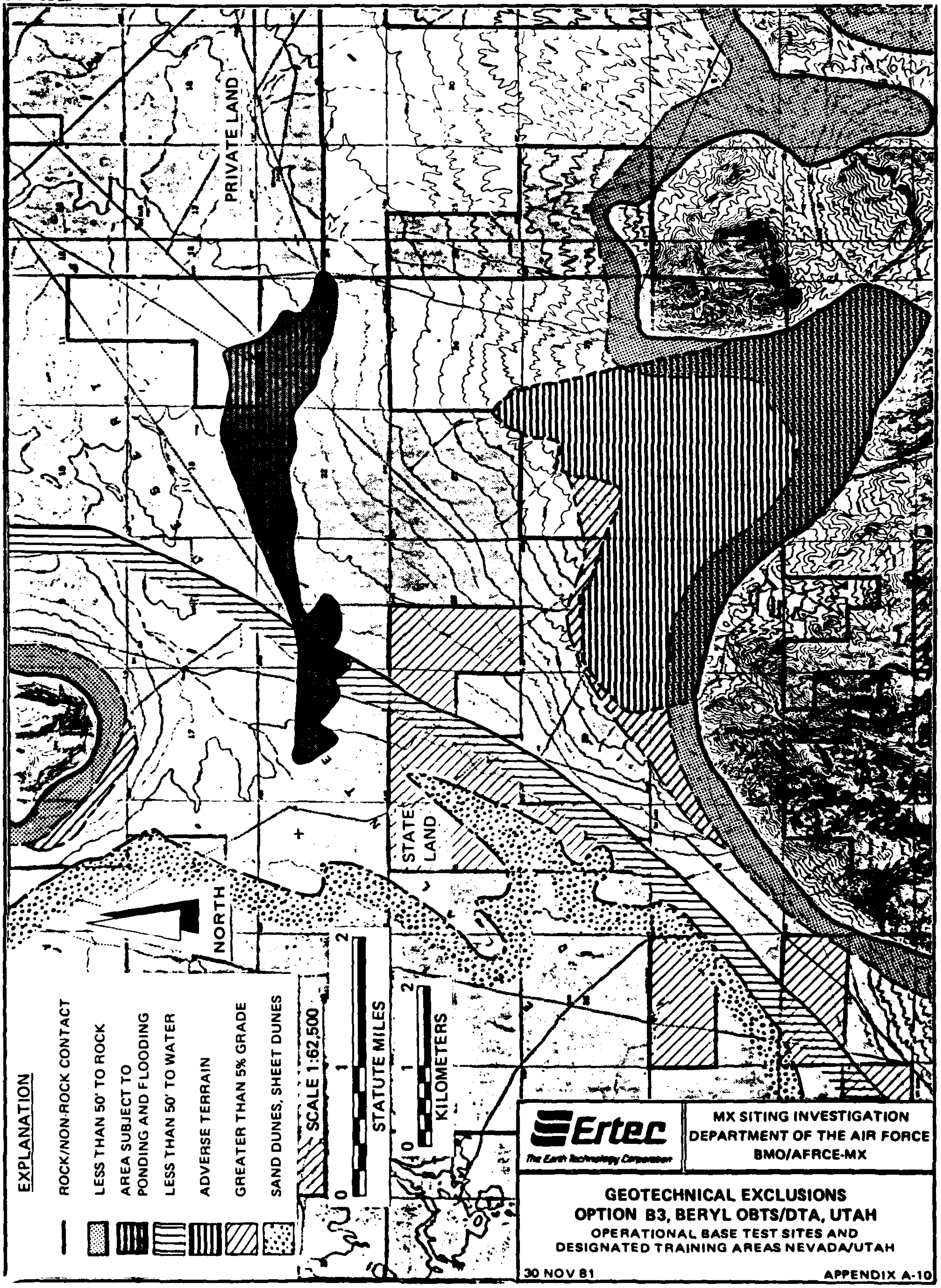
OPTION B2A, BERYL OBTS/DTA, UTAH
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81 APPENDIX A-8



OPERATIONAL EXCLUSIONS
OPTION B3, BERYL OBTS/DTA, UTAH
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81 APPENDIX A-9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STATE LAND
NORTH
EXPLANATION
ROCK/NON-ROCK CONTACT
LESS THAN 50' TO ROCK
AREA SUBJECT TO PONDING AND FLOODING
LESS THAN 50' TO WATER
ADVERSE TERRAIN
GREATER THAN 5% GRADE
SAND DUNES, SHEET DUNES
SCALE 1:62,500
0 1 2
STATUTE MILES
0 1 2
KILOMETERS
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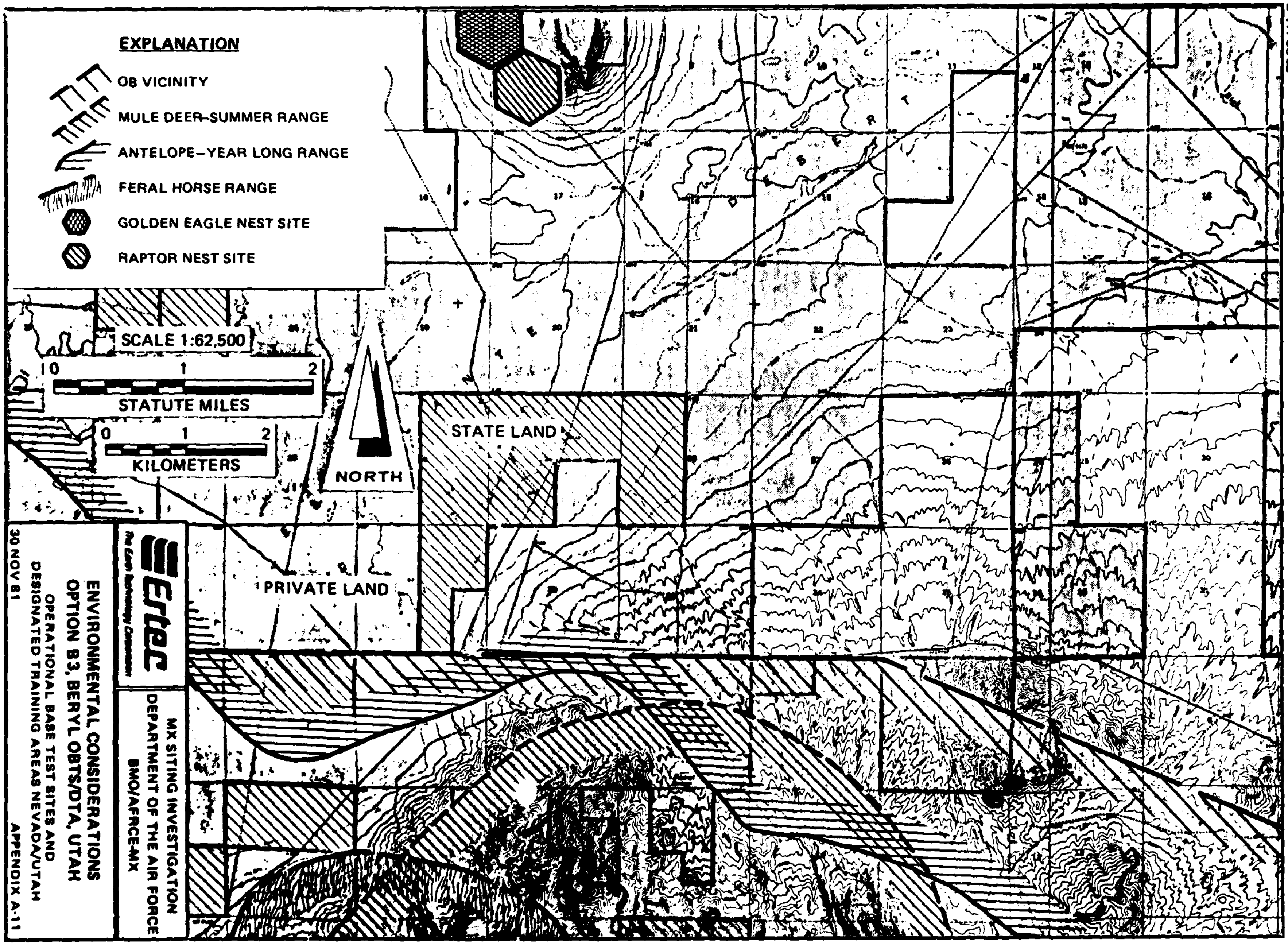
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
APPENDIX A-10



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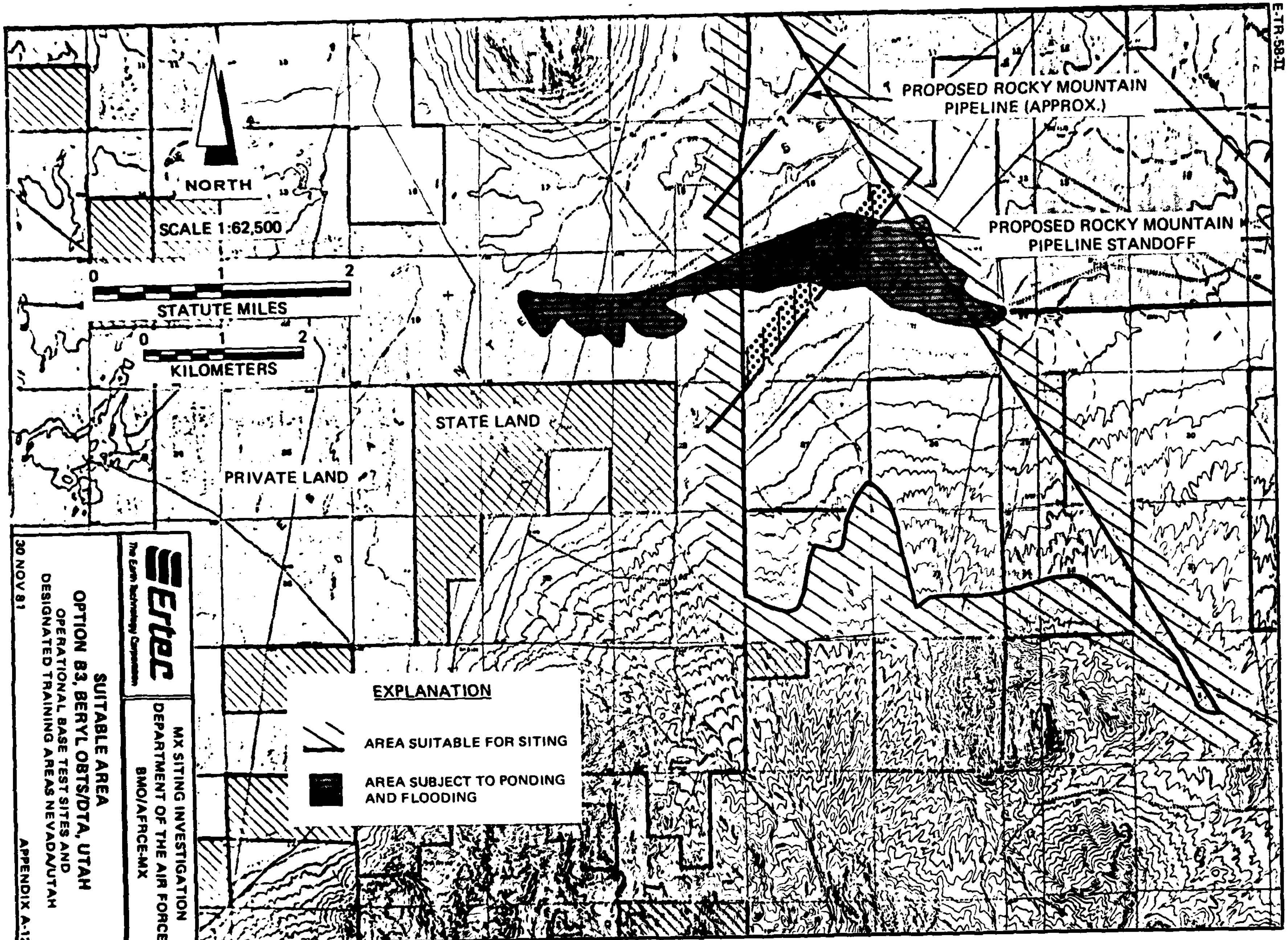
OPTION B3, BERYL OBTS/DTA, UTAH

OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81

APPENDIX A-11



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SUITABLE AREA
OPTION B3, BERYL OBTS/DTA, UTAH
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

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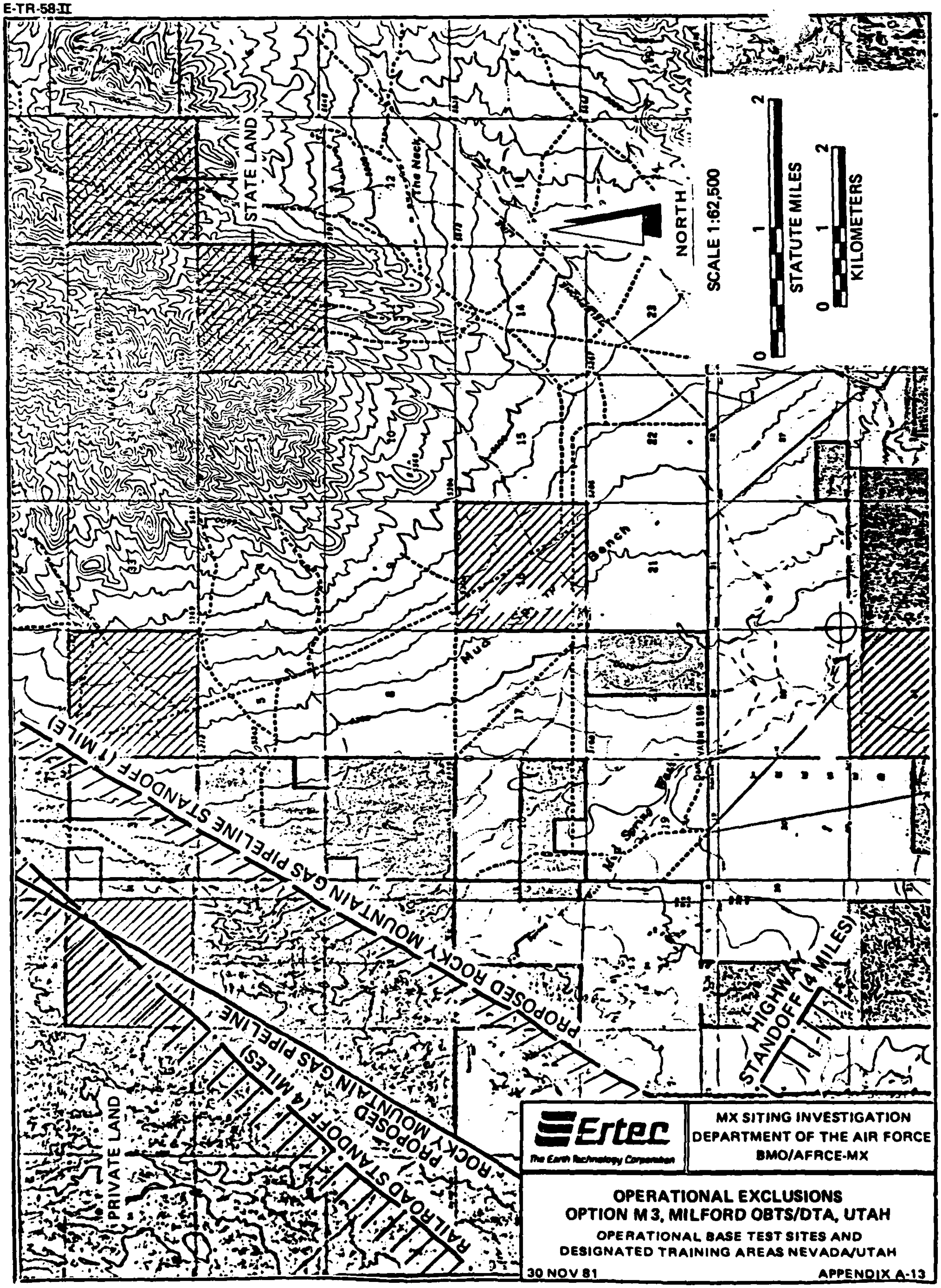
APPENDIX A-12



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OPTION M 3, MILFORD OBTS/DTA, UTAH
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

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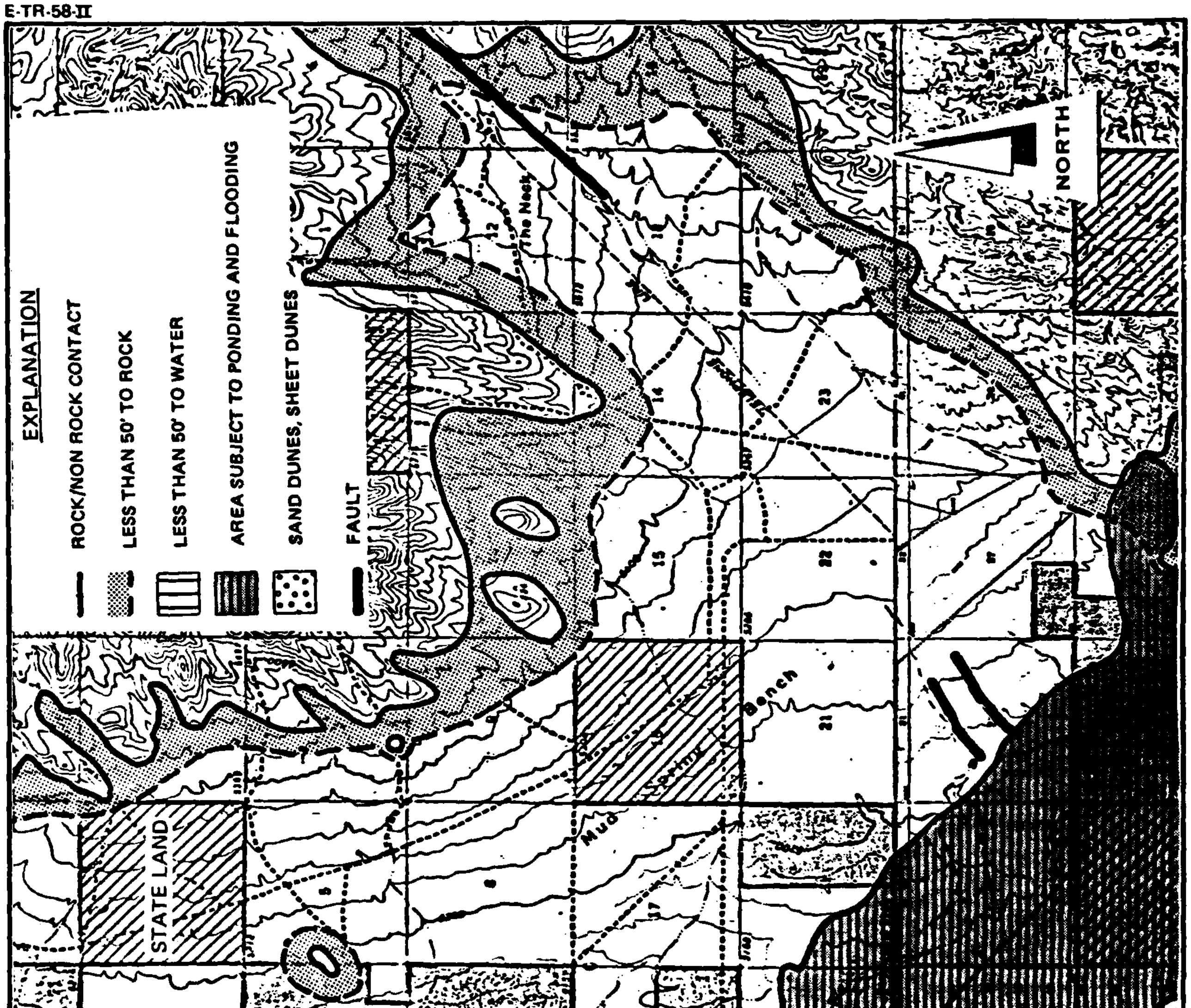

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OPTION M3, MILFORD OBTS/DTA, UTAH

OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

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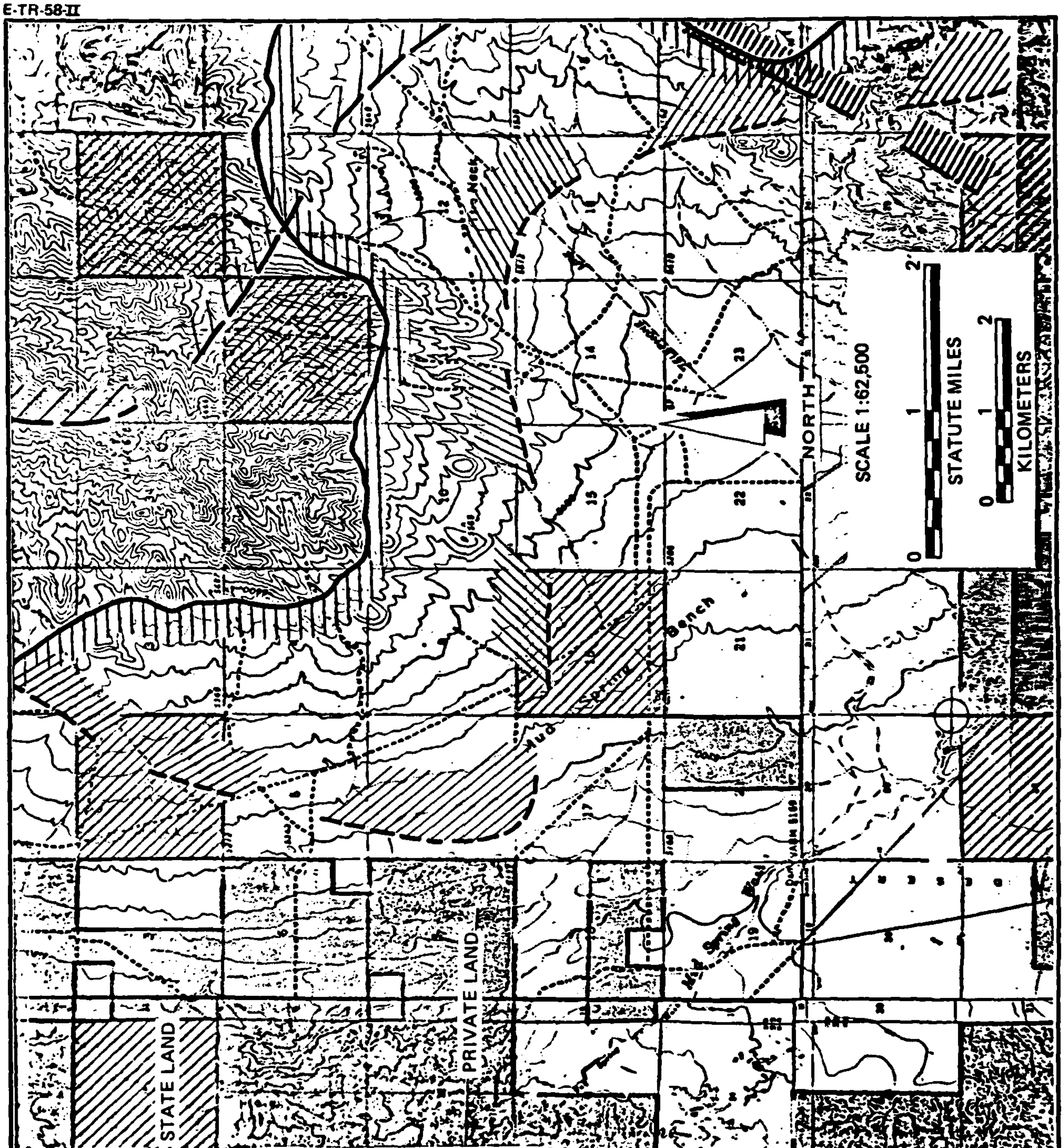

EXPLANATION

OB VICINITY ZONE

MULE DEER-WINTER RANGE
HIGH PRIORITY

ANTELOPE-YEAR LONG RANGE

BALD EAGLE
B-KNOWN LIGHT DENSITY-WINTER HABITAT

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OPTION M3, MILFORD OBTS/DTA, UTAH
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

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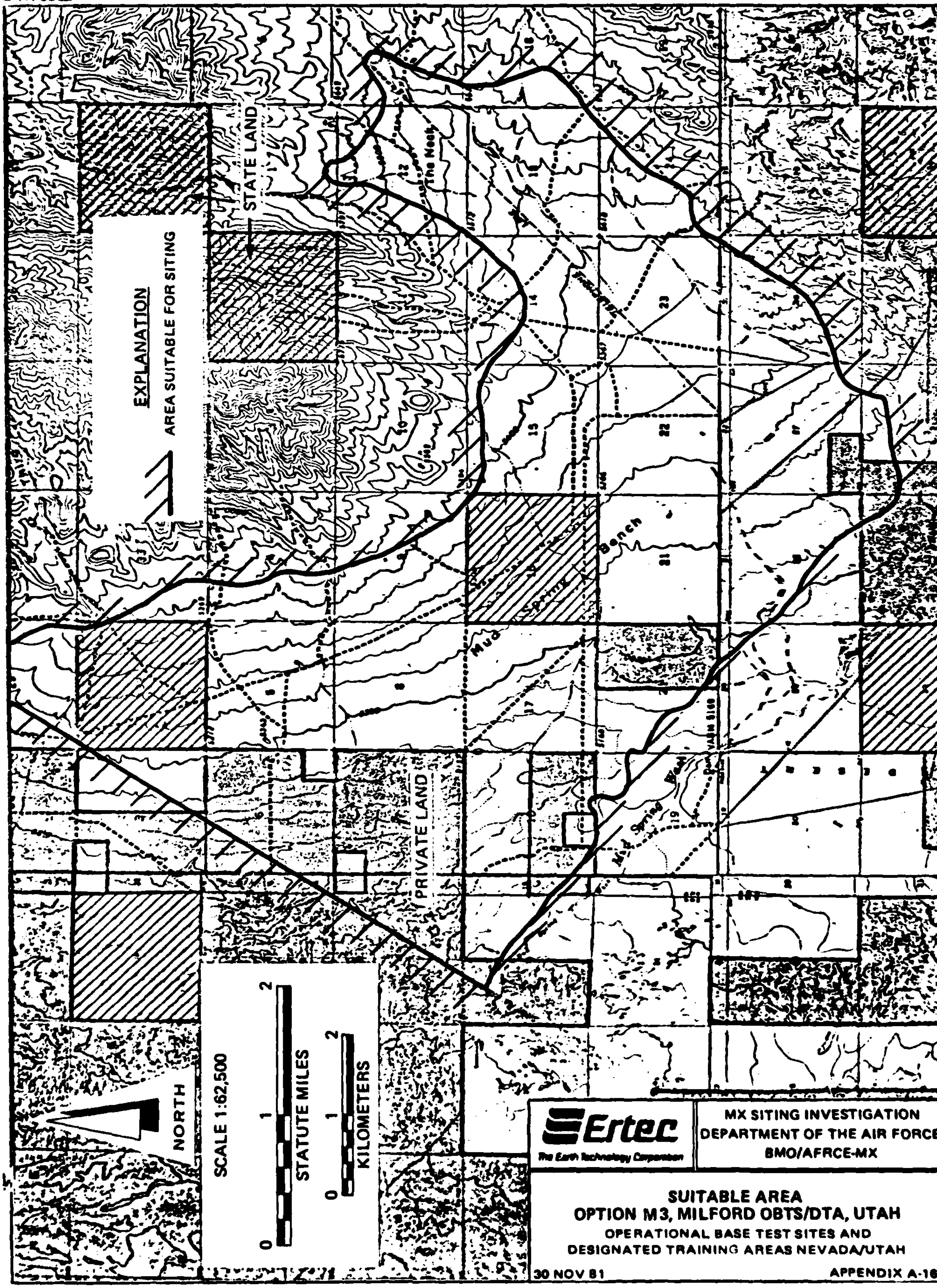
APPENDIX A-15



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SUITABLE AREA
OPTION M3, MILFORD OBTS/DTA, UTAH
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

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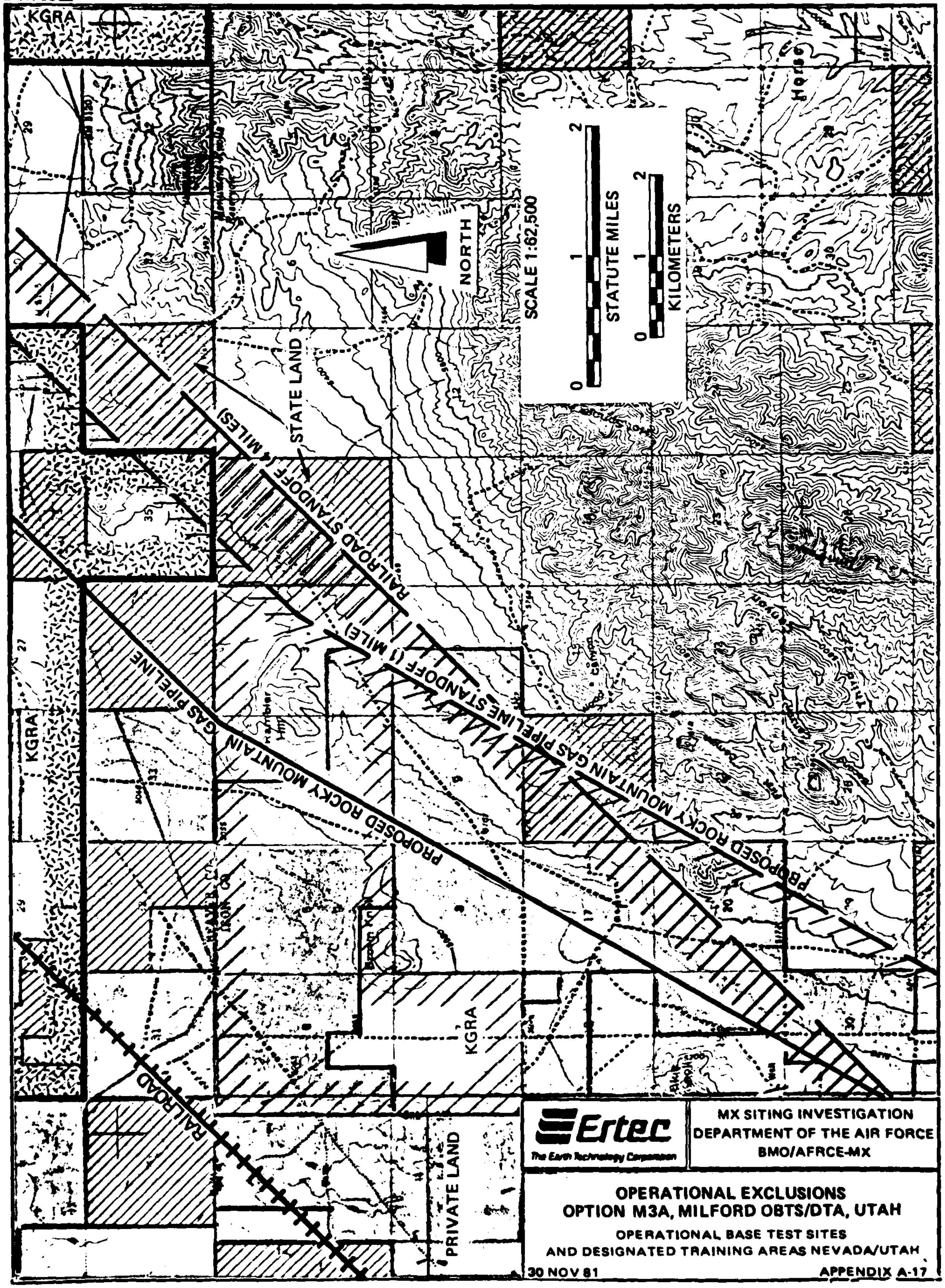

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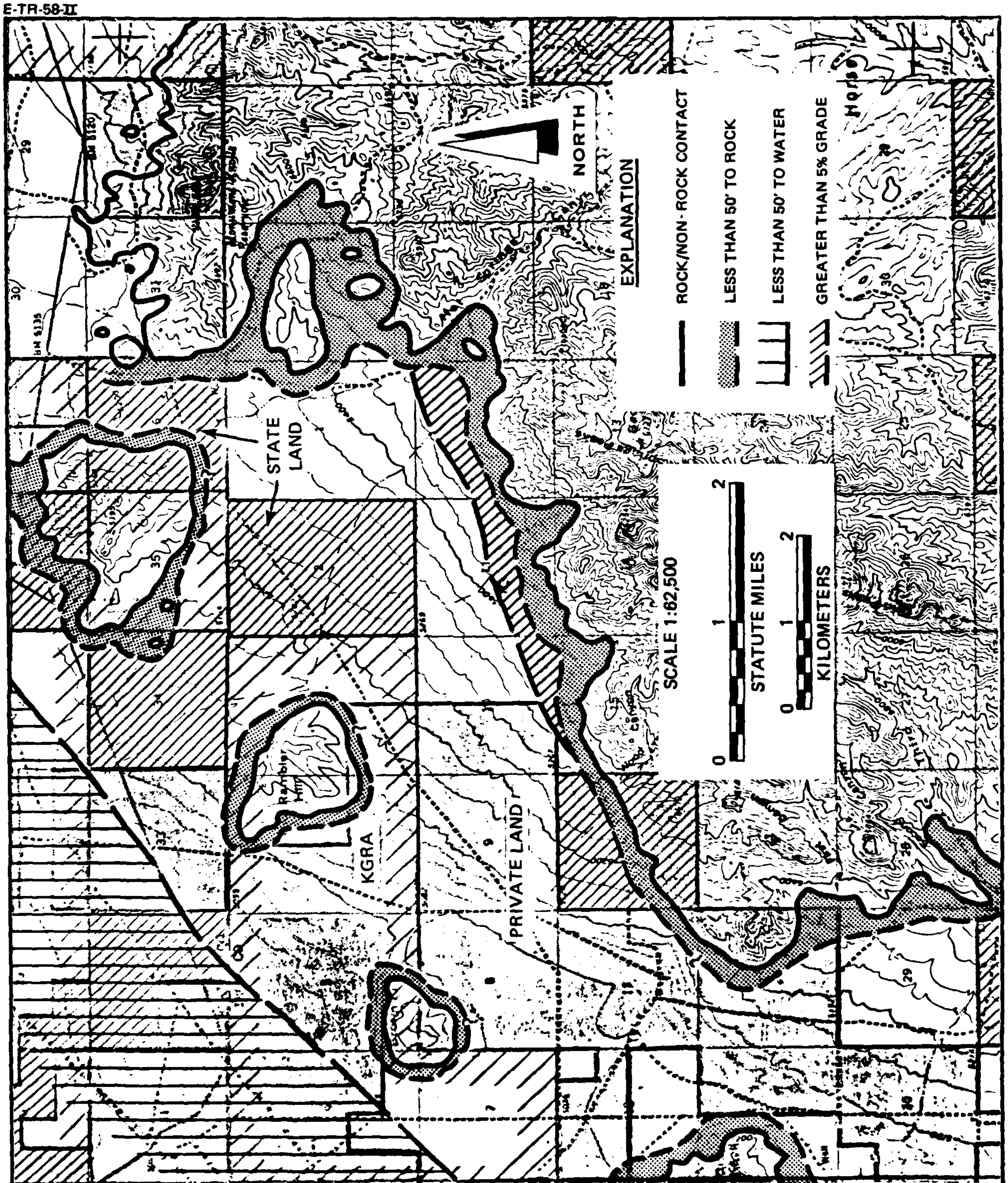
OPERATIONAL EXCLUSIONS
OPTION M3A, MILFORD OBTS/DTA, UTAH

OPERATIONAL BASE TEST SITES
AND DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81



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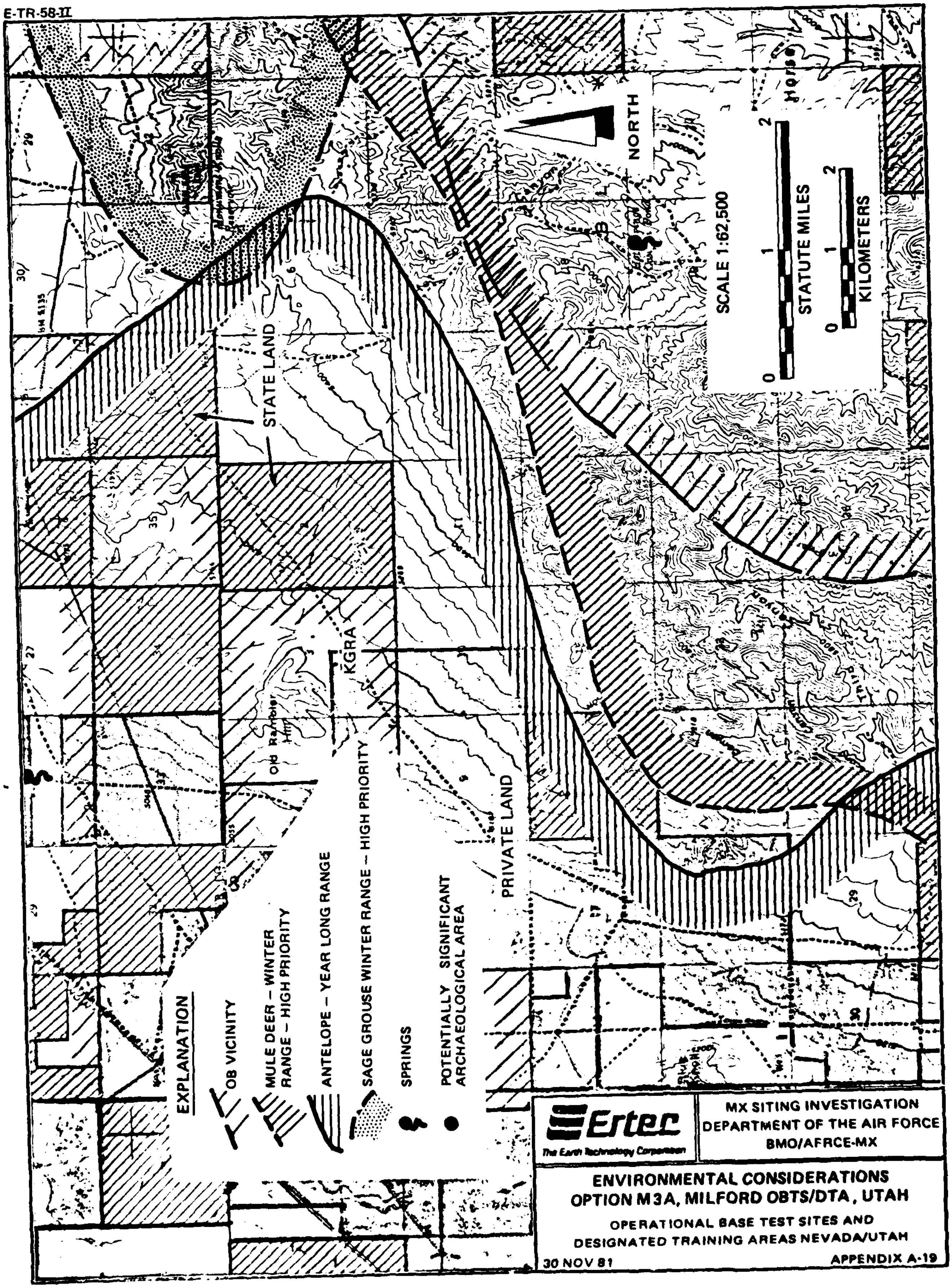
GEOTECHNICAL EXCLUSIONS
OPTION M3A, MILFORD OBTS/DTA, UTAH

OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81

E-TR-58-II



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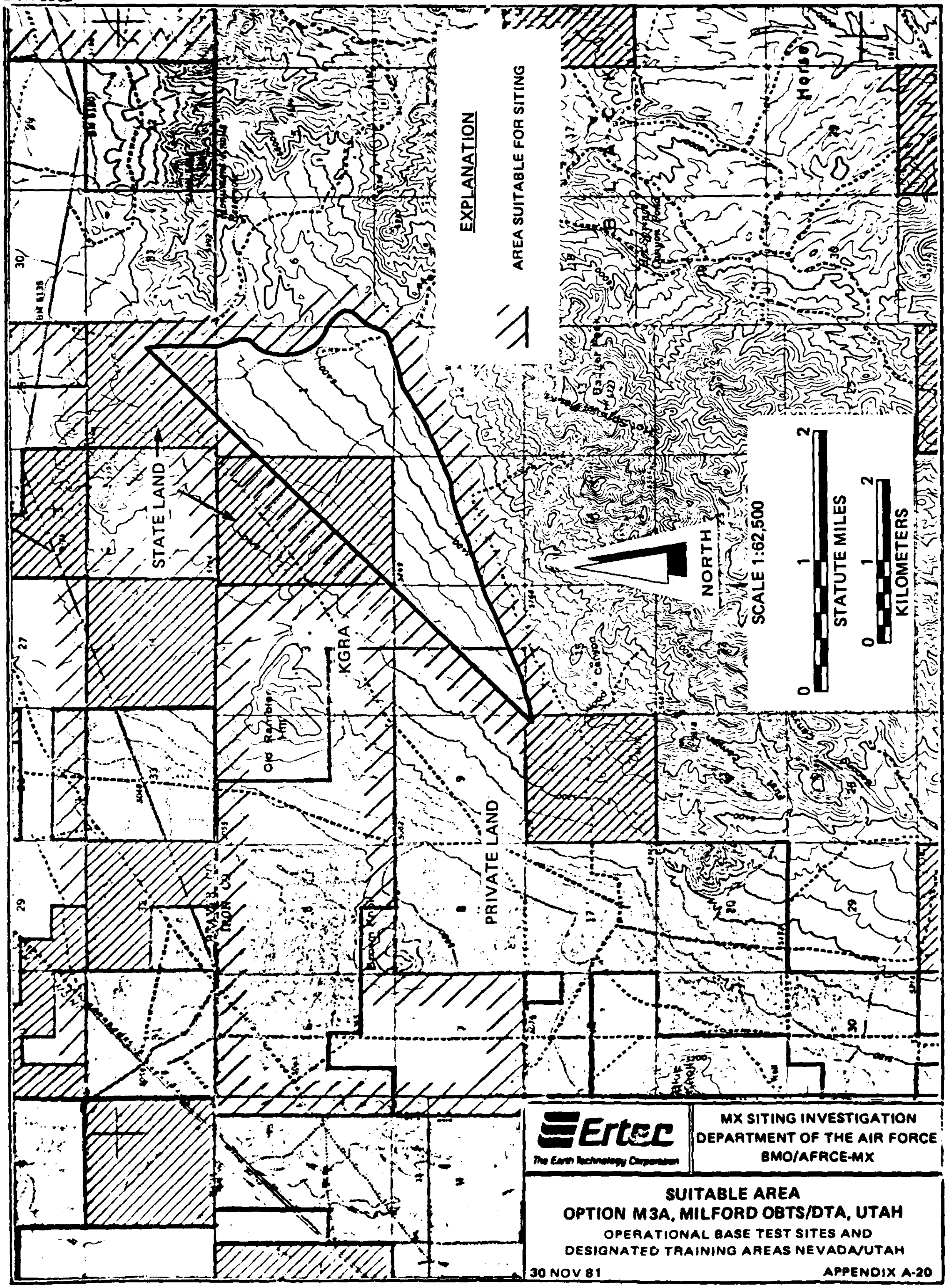
ENVIRONMENTAL CONSIDERATIONS
OPTION M3A, MILFORD OBTS/DTA, UTAH

OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81

APPENDIX A-19



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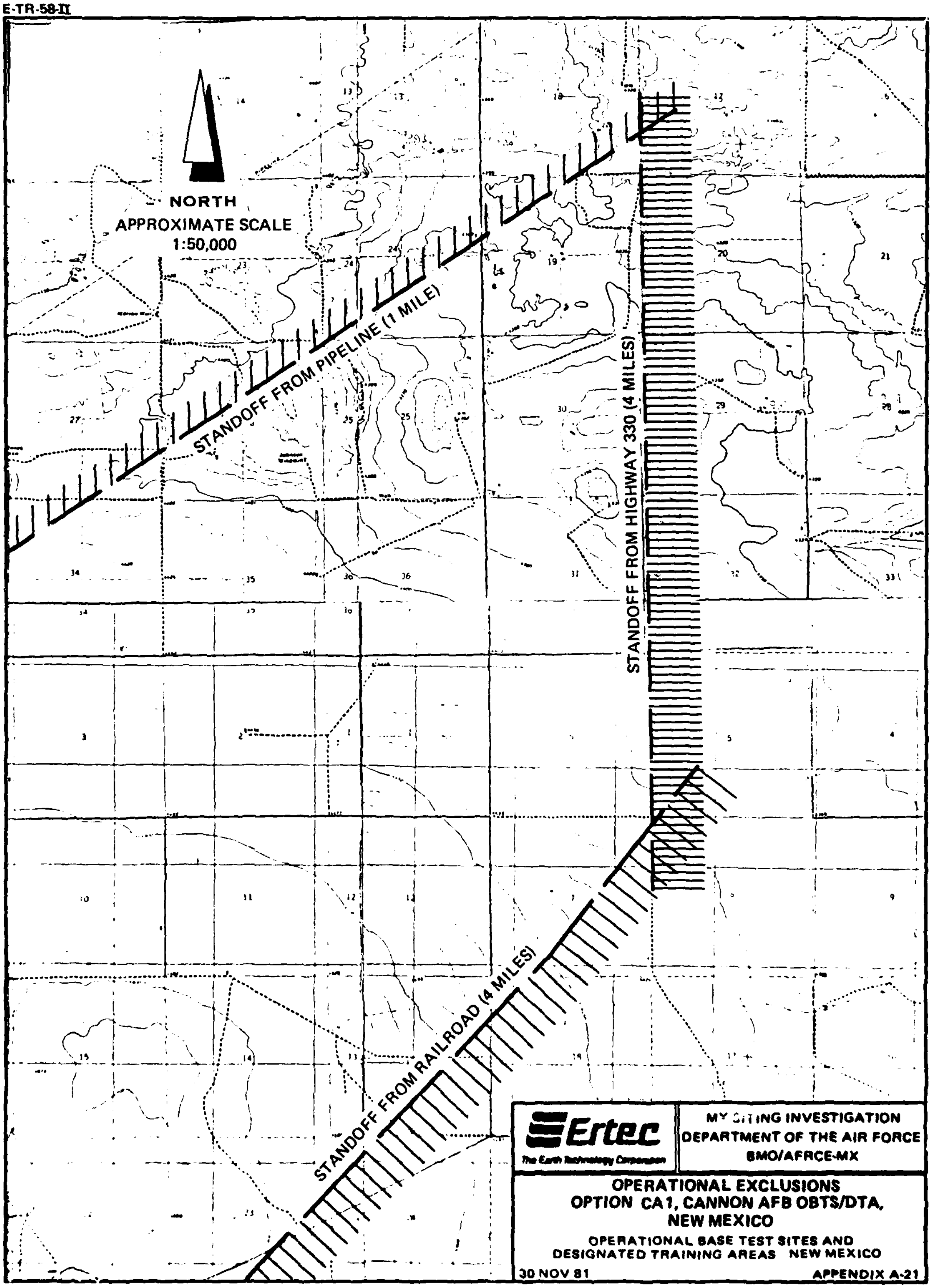
SUITABLE AREA
OPTION M3A, MILFORD OBTS/DTA, UTAH
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81



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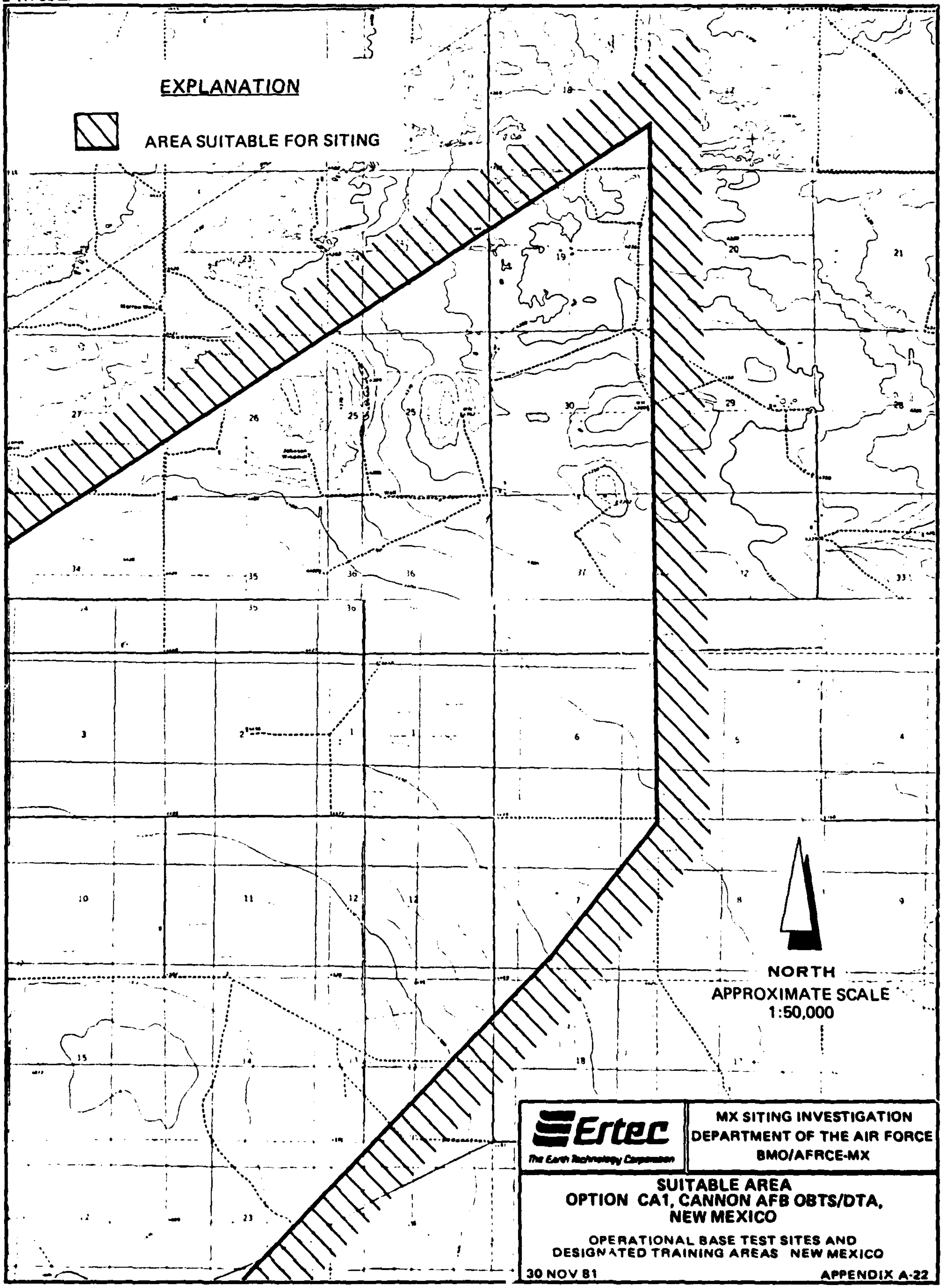
OPERATIONAL EXCLUSIONS
OPTION CA1, CANNON AFB OBTS/DTA,
NEW MEXICO

OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEW MEXICO

30 NOV 81


EXPLANATION
AREA SUITABLE FOR SITING
NORTH
APPROXIMATE SCALE
1:50,000
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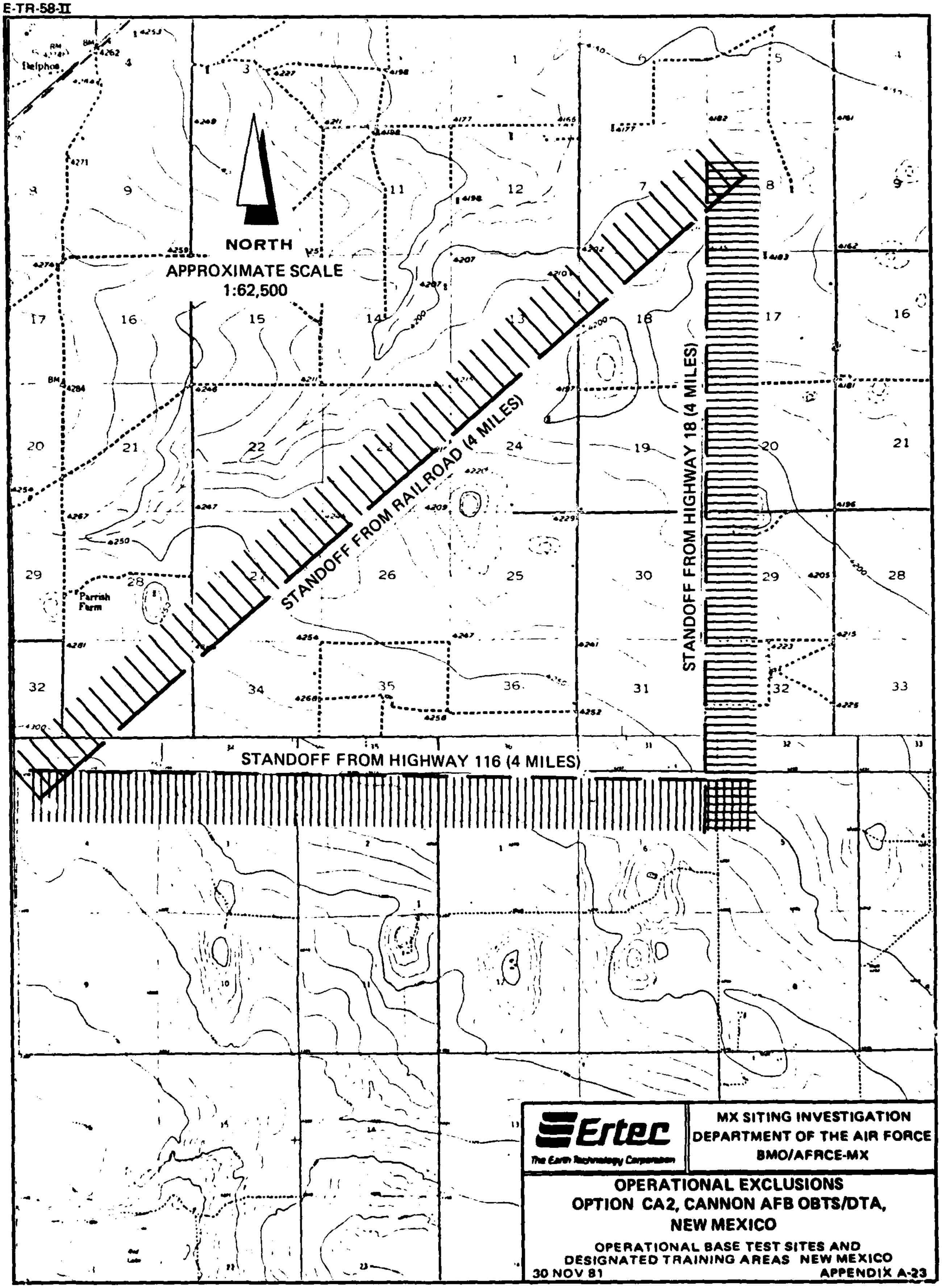
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX
SUITABLE AREA
OPTION CA1, CANNON AFB OBTS/DTA,
NEW MEXICO
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEW MEXICO
30 NOV 81
APPENDIX A-22



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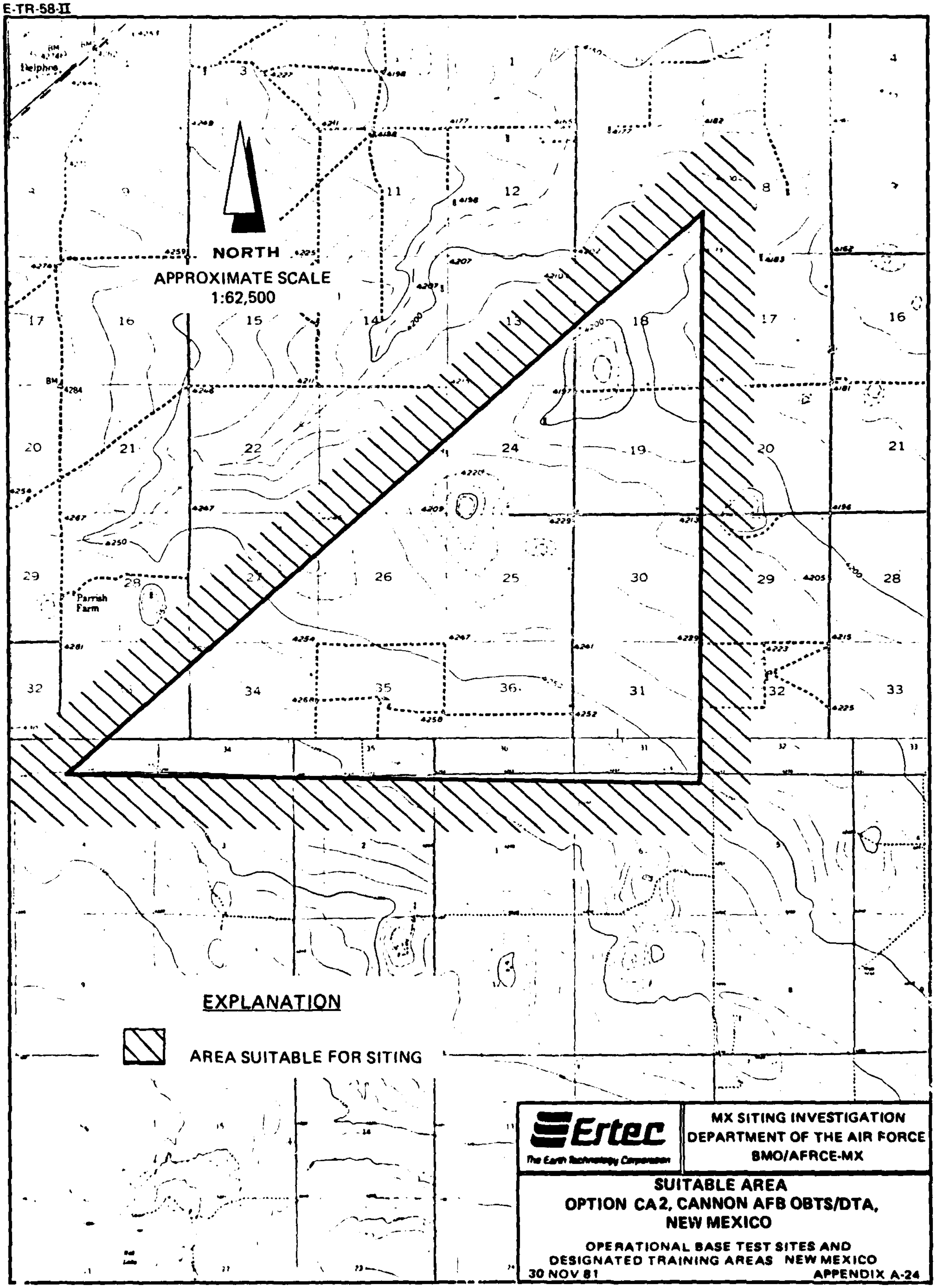
OPERATIONAL EXCLUSIONS
OPTION CA2, CANNON AFB OBTS/DTA, NEW MEXICO

OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEW MEXICO

30 NOV 81



NORTH
APPROXIMATE SCALE
1:62,500
Delphos
Parrish Farm
EXPLANATION
AREA SUITABLE FOR SITING
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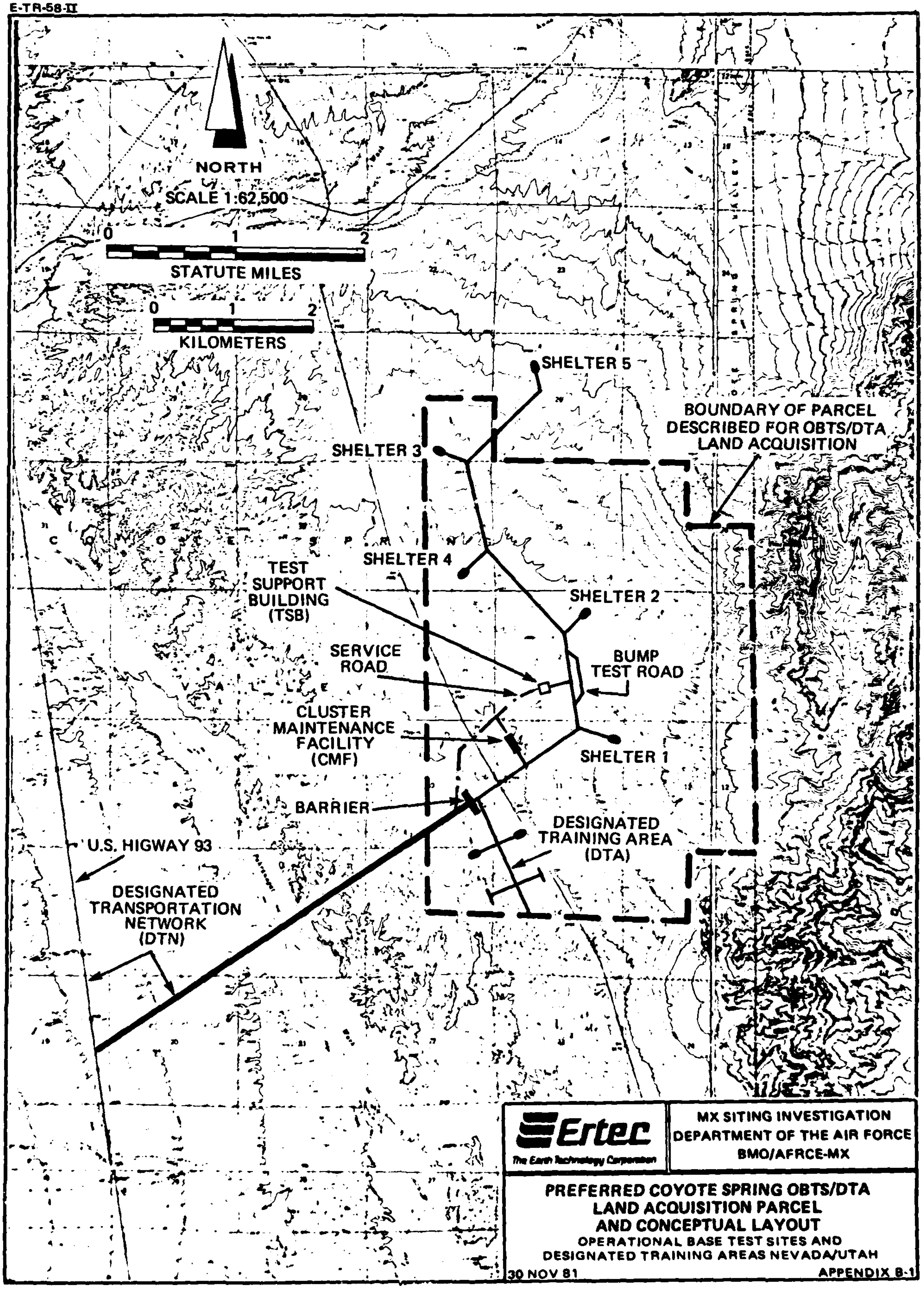
SUITABLE AREA
OPTION CA2, CANNON AFB OBTS/DTA,
NEW MEXICO
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEW MEXICO
30 NOV 81
APPENDIX A-24

APPENDIX B

OBTS/DTA LAND ACQUISITION PARCELS FOR EACH MOB/ PREFERRED AND ALTERNATE LAYOUTS FOR EACH OPTION



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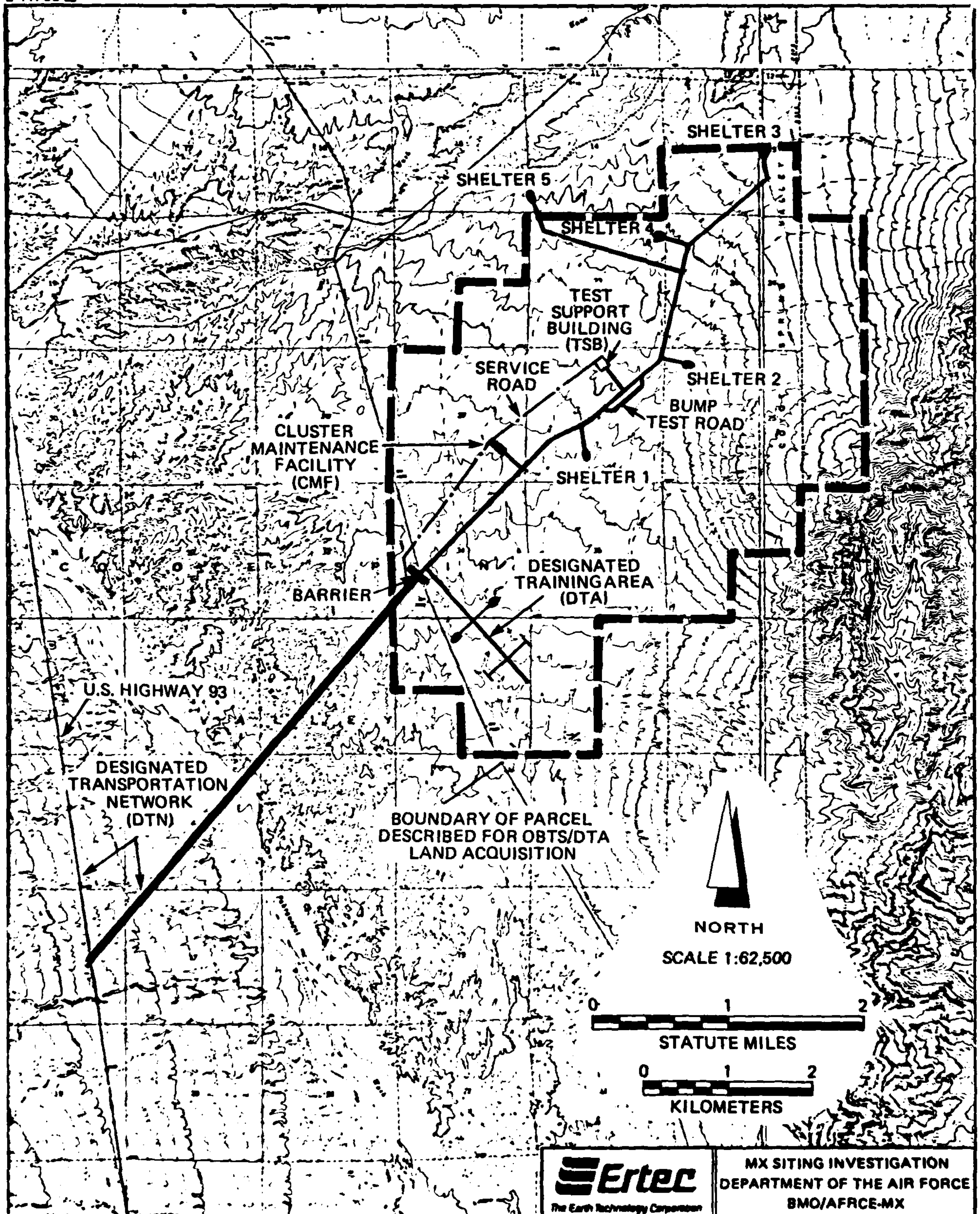
PREFERRED COYOTE SPRING OBTS/DTA LAND ACQUISITION PARCEL AND CONCEPTUAL LAYOUT

OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81

APPENDIX B-1



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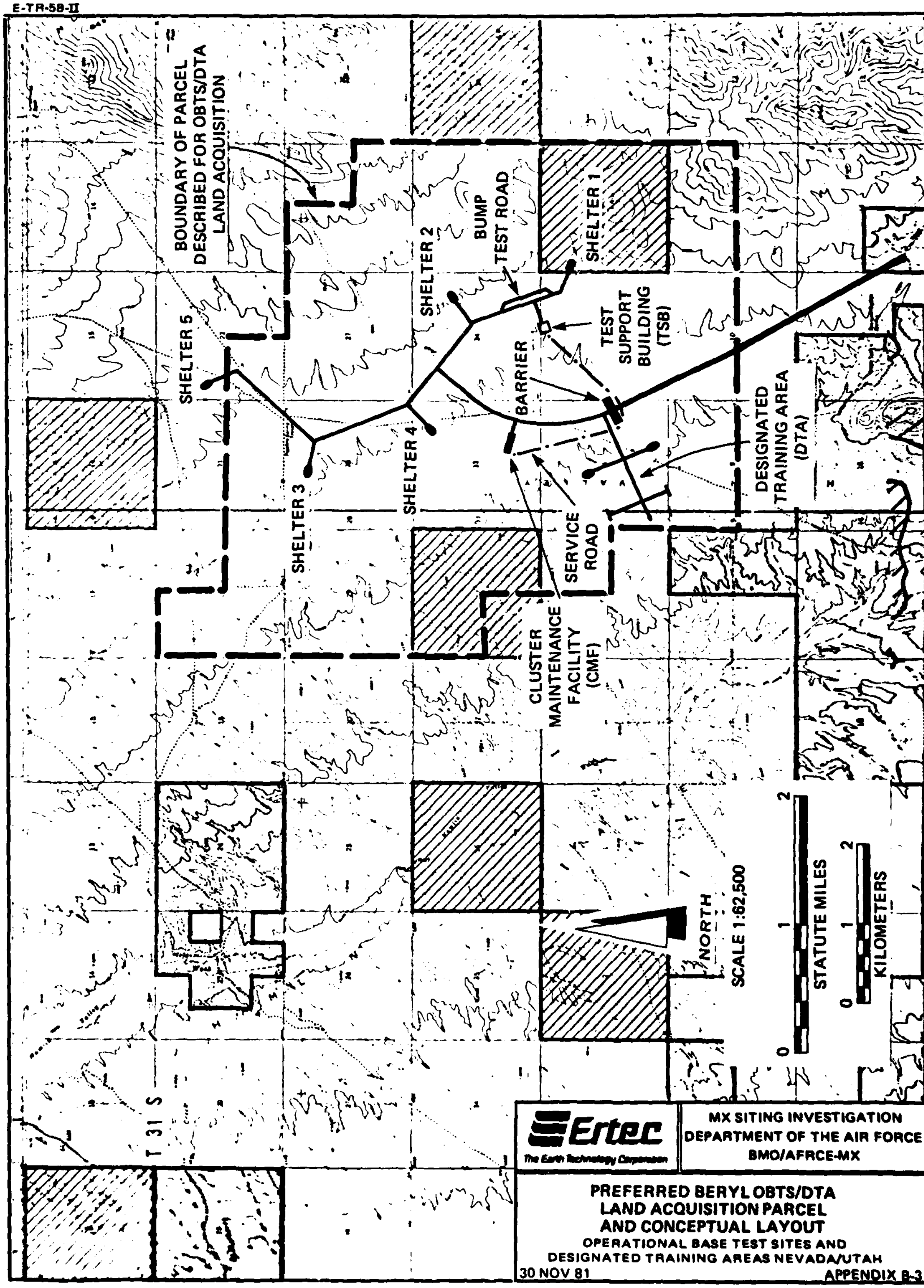
ALTERNATE COYOTE SPRING OBTS/DTA LAND ACQUISITION PARCEL AND CONCEPTUAL LAYOUT

OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81



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DEPARTMENT OF THE AIR FORCE
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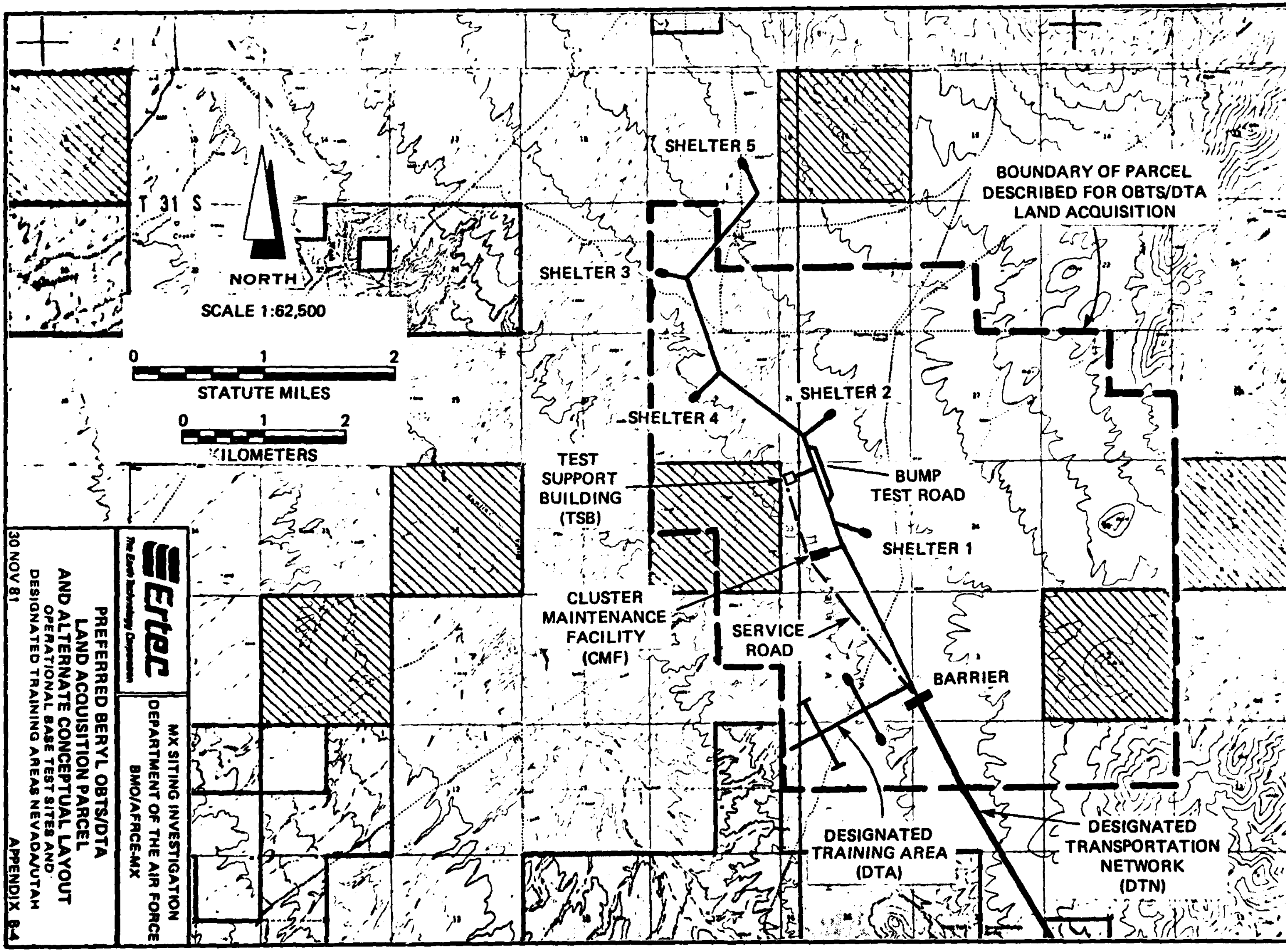
PREFERRED BERYL OBTS/DTA LAND ACQUISITION PARCEL AND CONCEPTUAL LAYOUT

OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81 APPENDIX B-3



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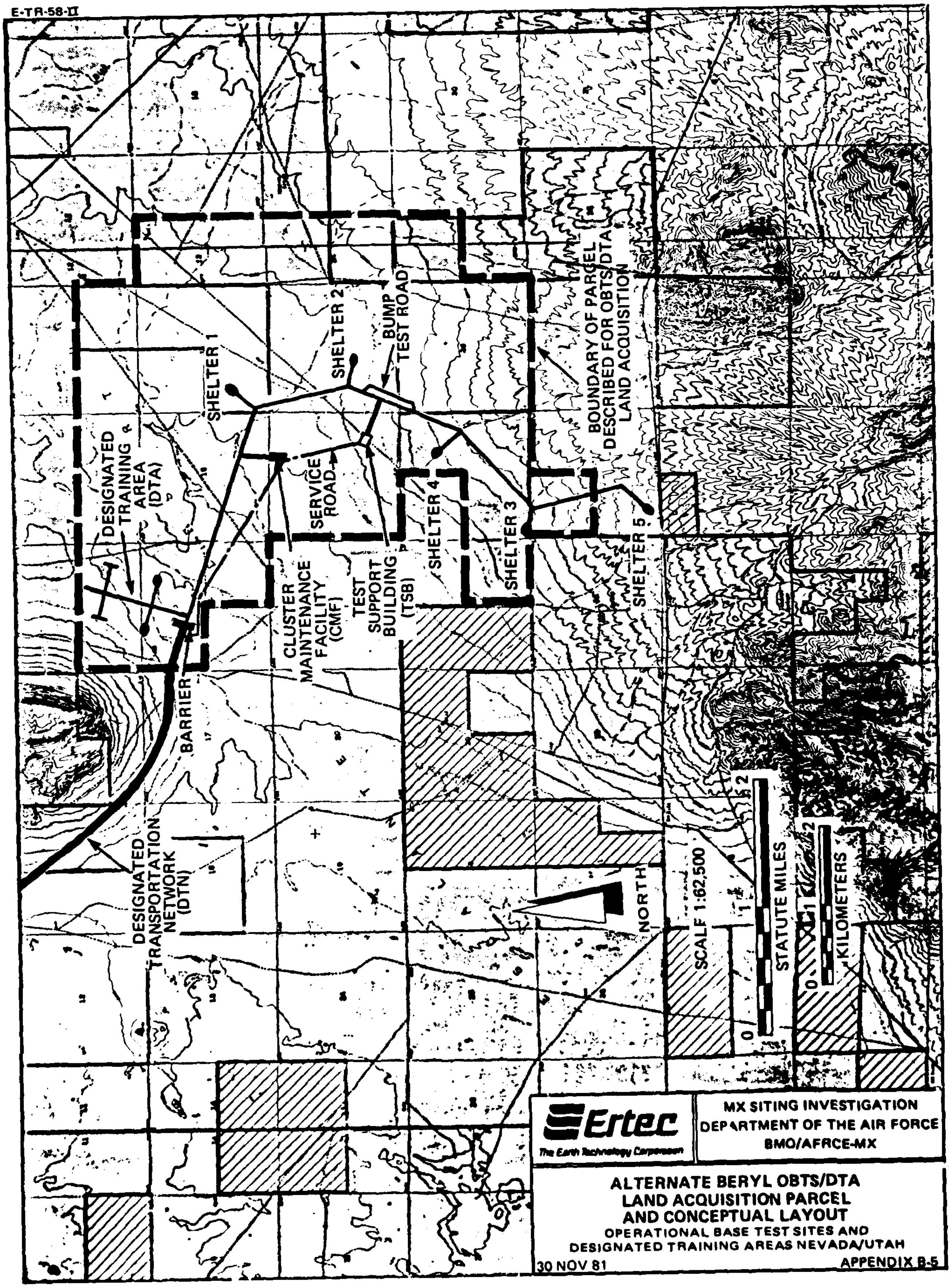
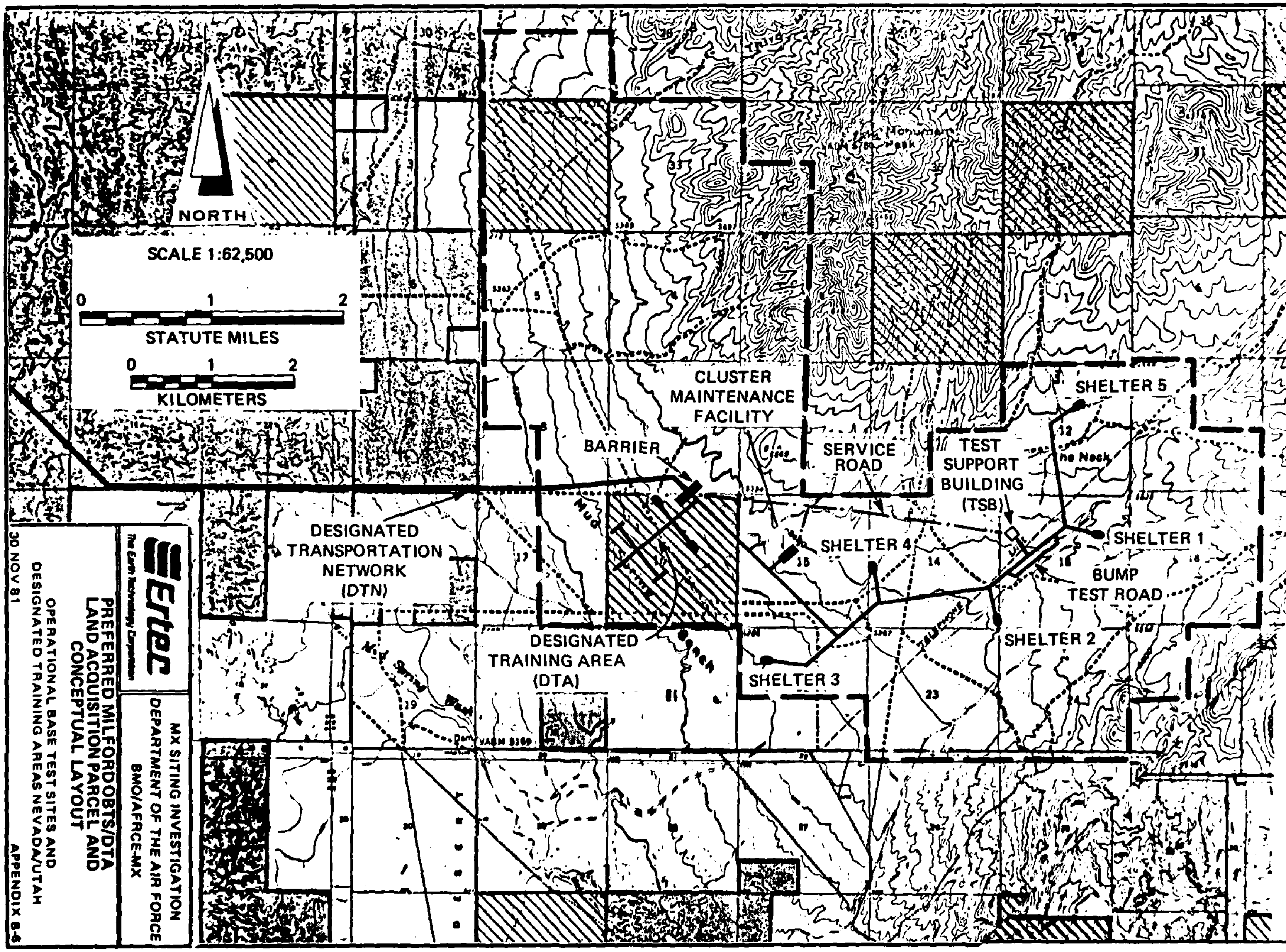
PREFERRED BERYL OBTS/DTA
LAND ACQUISITION PARCEL
AND ALTERNATE CONCEPTUAL LAYOUT
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81 APPENDIX B-4


SHELTER 1
SHELTER 2
BUMP TEST ROAD
BOUNDARY OF PARCEL DESCRIBED FOR OBTS/DTA LAND ACQUISITION
DESIGNATED TRAINING AREA (DTA)
SERVICE ROAD
SHELTER 4
SHELTER 3
SHELTER 5
CLUSTER MAINTENANCE FACILITY (CMF)
TEST SUPPORT BUILDING (TSB)
BARRIER
DESIGNATED TRANSPORTATION NETWORK (DTN)
NORTH
SCALE 1:62,500
0 1 2
STATUTE MILES
0 1 2
KILOMETERS
Ertec
The Earth Technology Corporation
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX
ALTERNATE BERYL OBTS/DTA
LAND ACQUISITION PARCEL
AND CONCEPTUAL LAYOUT
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
APPENDIX B-5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SCALE 1:62,500
0 1 2
STATUTE MILES
0 1 2
KILOMETERS
CLUSTER MAINTENANCE FACILITY
BARRIER
SERVICE ROAD
TEST SUPPORT BUILDING (TSB)
SHELTER 5
SHELTER 1
SHELTER 4
SHELTER 2
SHELTER 3
BUMP TEST ROAD
DESIGNATED TRANSPORTATION NETWORK (DTN)
DESIGNATED TRAINING AREA (DTA)
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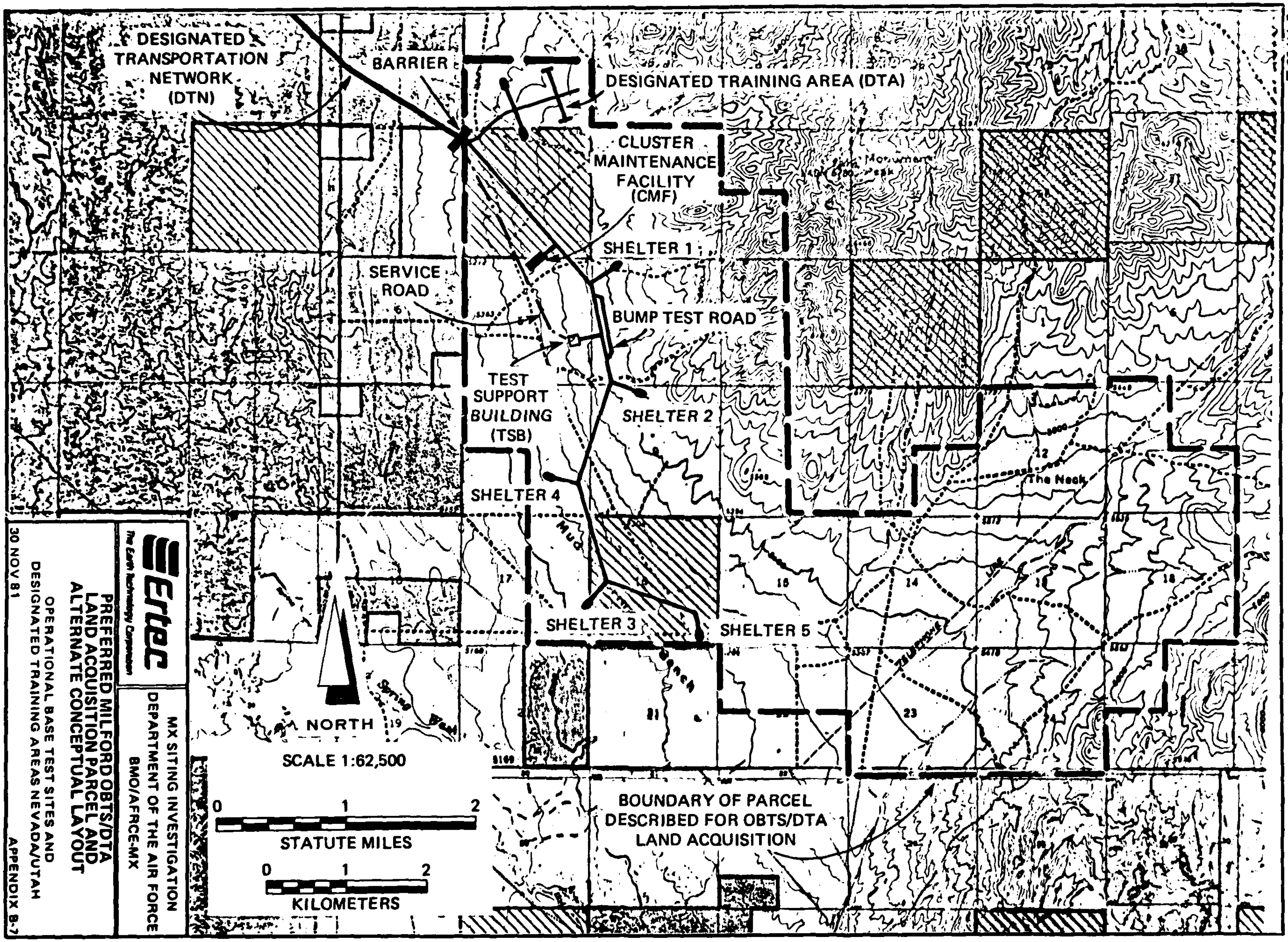
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX
PREFERRED MILFORD OBTS/DTA LAND ACQUISITION PARCEL AND CONCEPTUAL LAYOUT
OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
APPENDIX B-6



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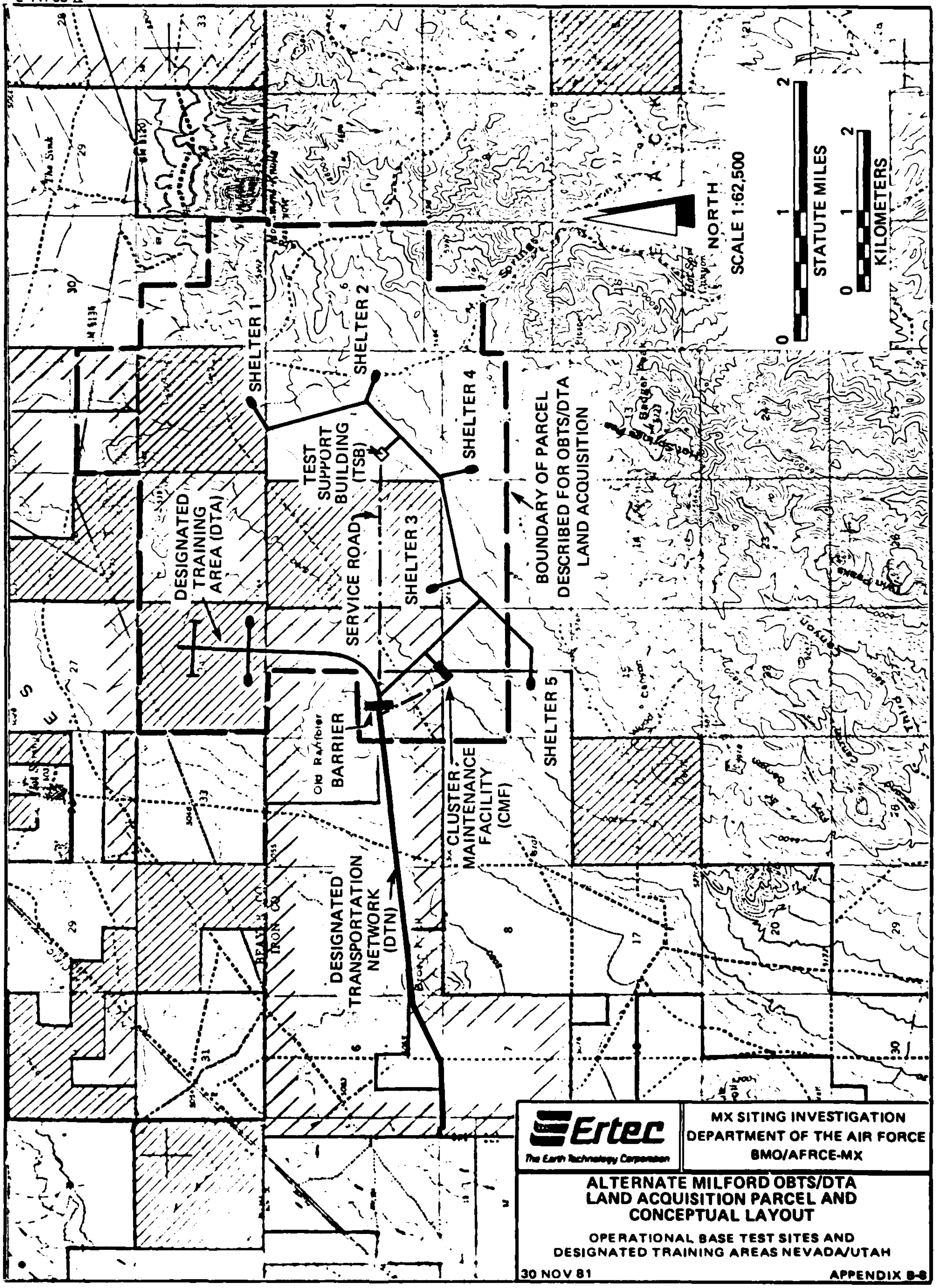
PREFERRED MILFORD OBTS/DTA LAND ACQUISITION PARCEL AND ALTERNATE CONCEPTUAL LAYOUT

OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81



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ALTERNATE MILFORD OBTS/DTA LAND ACQUISITION PARCEL AND CONCEPTUAL LAYOUT

OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81

APPENDIX B-8

AD-A113 217 ERTEC WESTERN INC LONG BEACH CA F/G 16/1
MX SITING INVESTIGATION. MX SYSTEM SITING SUMMARY REPORT. DTN/A--ETC(U)
JAN 82 F04704-80-C-0006
UNCLASSIFIED E-TR-58-VOL-2 NL

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DATE
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4 82
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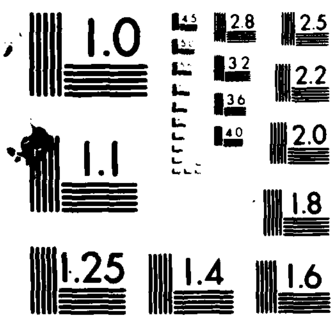
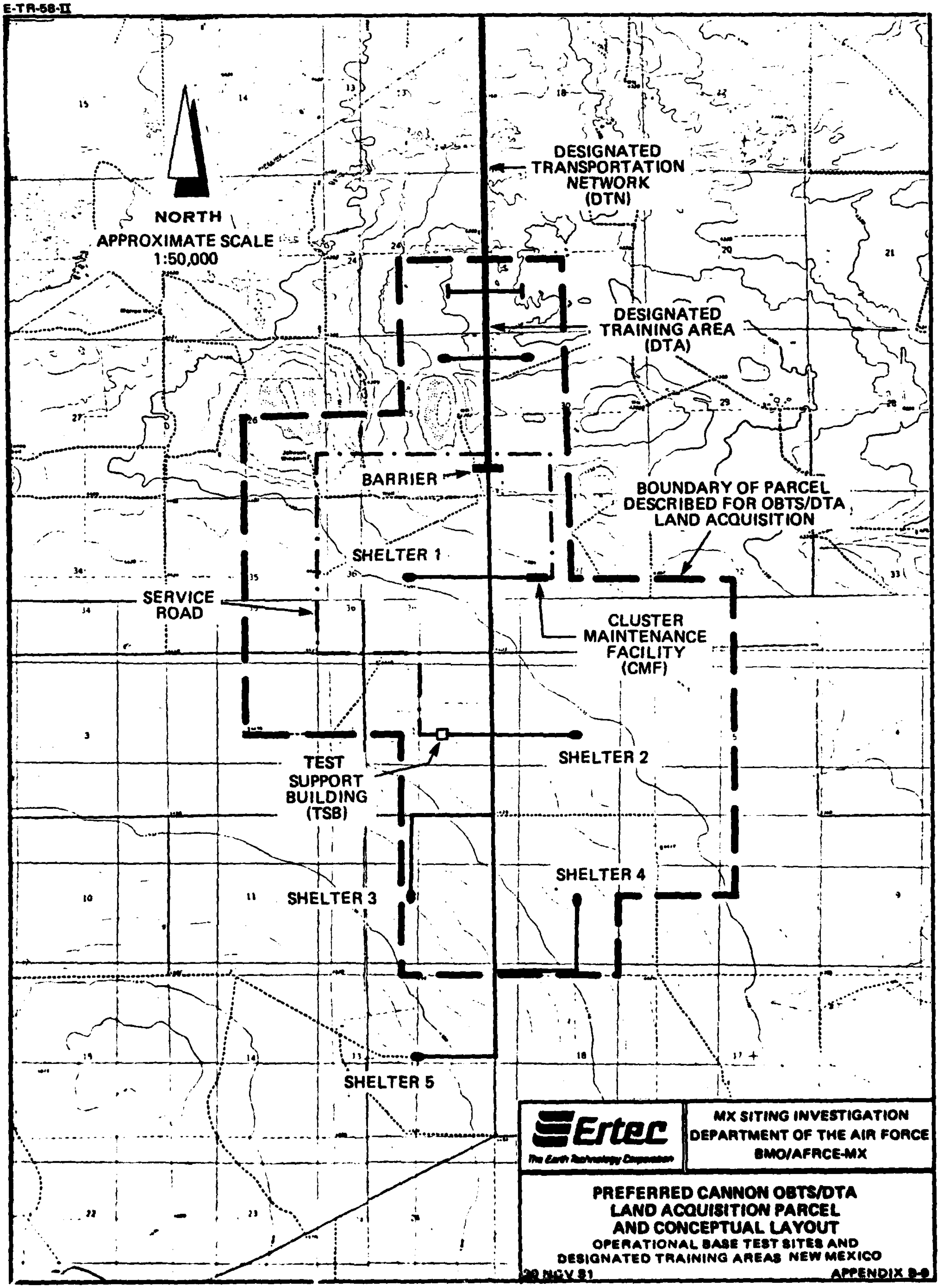


MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963 A



**PREFERRED CANNON OBTS/DTA
LAND ACQUISITION PARCEL
AND CONCEPTUAL LAYOUT**

OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEW MEXICO

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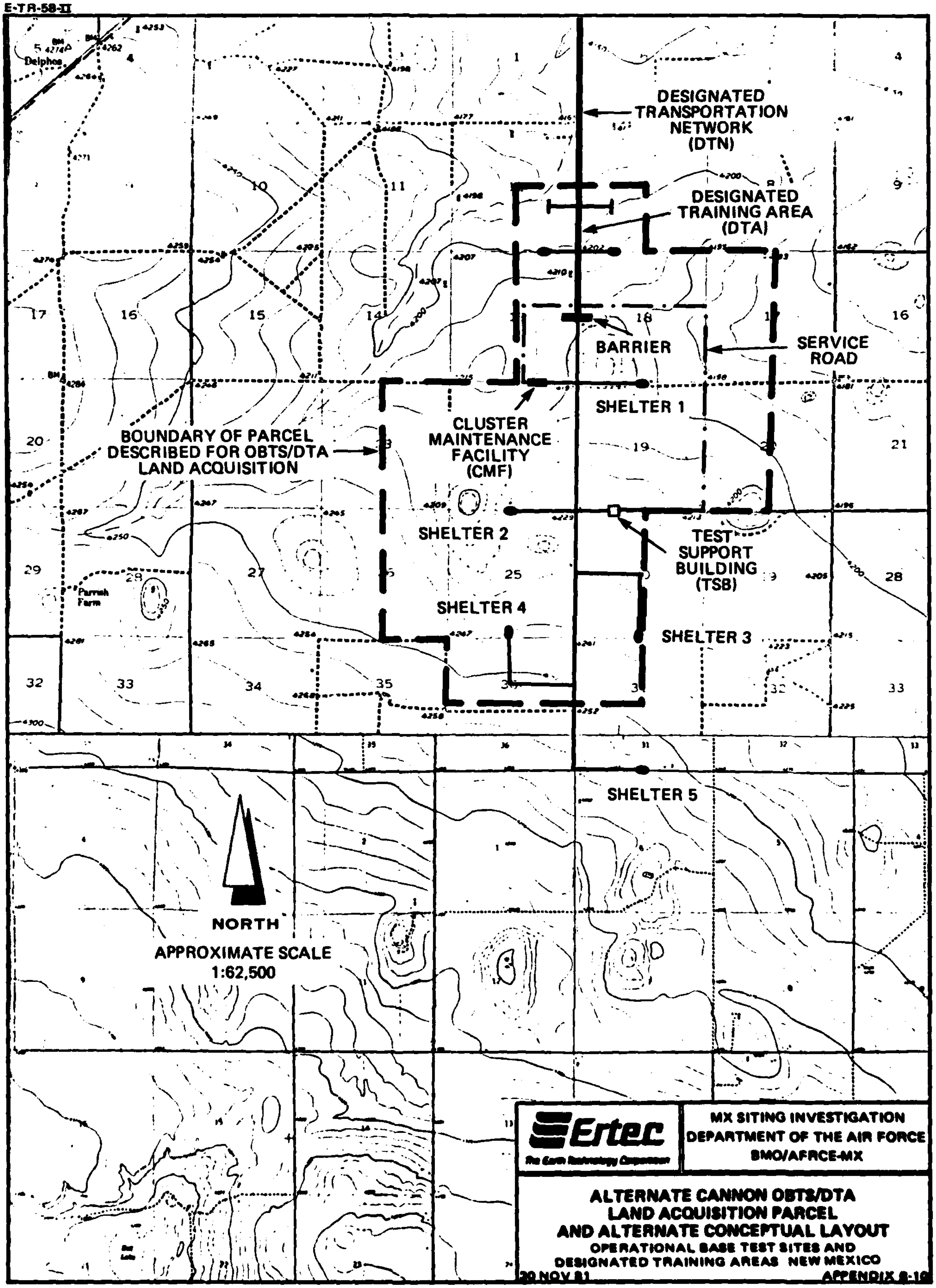

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MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
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ALTERNATE CANNON OBTS/DTA LAND ACQUISITION PARCEL AND ALTERNATE CONCEPTUAL LAYOUT

OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEW MEXICO

20 NOV 81 APPENDIX B-10

APPENDIX C

OBTS/DTA LAND ACQUISITION PARCEL DESCRIPTION FOR EACH MOB

COYOTE SPRING, PREFERRED SITE

Lincoln County, Nevada
T.11S.R.63E.
Section 27, SE 1/4
Section 34, E 1/2
Section 35, All
Section 36, S 1/2 and NW 1/4

SUBTOTAL 1600 Acres

T.12S.R.63E.
Section 1, All
Section 2, All
Section 3, E 1/2
Section 10, E 1/2
Section 11, All
Section 12, All
Section 13, NW 1/4
Section 14, N 1/2
Section 15, NE 1/4

SUBTOTAL 3840 Acres

TOTAL 5440 Acres

COYOTE SPRING, ALTERNATIVE SITE

Lincoln County, Nevada
T.11S.R.63E.
Section 13, S 1/2
Section 22, SE 1/4
Section 23, All
Section 24, All
Section 25, All
Section 26, All
Section 27, All
Section 34, All
Section 35, All
Section 36, N 1/2 and SW 1/4

SUBTOTAL 5440 Acres

T.12S.R.63E.
Section 2, W 1/2
Section 3, E 1/2 and NW 1/4

SUBTOTAL 800 Acres

T.11S.R.64E.
Section 19, W 1/2
Section 30, W 1/2

SUBTOTAL 640 Acres

TOTAL 6880 Acres

BERYL, PREFERRED SITE

Iron County, Utah
T.31S.R.18W.
Section 20, S1/2 and NW 1/4
Section 21, S 1/2
Section 22, SW 1/4
Section 26, S 1/2 and NW 1/4
Section 27, All
Section 28, All
Section 29, All
Section 32, N 1/2 and SE 1/4
Section 33, All
Section 34, All
Section 35, All

SUBTOTAL 5760 Acres

T.32S.R.18W.
Section 2, All
Section 3, All
Section 4, All
Section 5, NE 1/4
Section 9, N 1/2
Section 10, N 1/2
Section 11, N 1/2

SUBTOTAL 3040 Acres

TOTAL 8800 Acres

BERYL, ALTERNATIVE SITE

Iron County, Utah
T.34S.R.14W.
Section 9, S 1/2
Section 10, S 1/2
Section 11, S 1/2
Section 13, W 1/2
Section 14, All
Section 15, All
Section 16, N 1/2 and SE 1/4
Section 22, All
Section 23, All
Section 24, W 1/2
Section 25, NW 1/4
Section 26, All
Section 27, S 1/2 and NW 1/4
Section 28, SE 1/4
Section 34, NW 1/4

TOTAL 6240 Acres

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BERYL,UTAH,OBTS/DTA
LAND PARCEL DESCRIPTION

OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81

MILFORD, PREFERRED SITE

Iron County, Utah
T.31S.R.12W.
Section 29, S 1/2
Section 32, All
Section 33, All
Section 34, SW 1/4

SUBTOTAL	1760 Acres

T.32S.R.12W.
Section 3, W 1/2
Section 4, All
Section 5, All
Section 8, W 1/2 and SE 1/4
Section 9, All
Section 10, W 1/2
Section 11, SE 1/4
Section 12, All
Section 13, All
Section 14, All
Section 15, All
Section 16, All
Section 17, E 1/2
Section 22, N 1/2
Section 23, All
Section 24, All

SUBTOTAL	8320 Acres

T.32S.R.11W.
Secion 7, S 1/2 and NE 1/4
Section 18, All
Section 19, NW 1/4

SUBTOTAL	1280 Acres
TOTAL	11,360 Acres

MILFORD, ALTERNATIVE SITE

Beaver County, Utah
T.30S.R.12W.
Section 25, S 1/2
Section 34, All
Section 35, All
Section 36, All

SUBTOTAL	2240 Acres

T.30S.R.11W.
Section 31, S 1/2 and NW 1/4

SUBTOTAL	480 Acres

Iron County, Utah
T.31S.R.12W.
Section 1, All
Section 2, S 1/2 and NE 1/4
Section 11, N 1/2
Section 12, N 1/2

SUBTOTAL	1760 Acres

T.31S.R.11W.
Section 6, All
Section 7, NW 1/4

SUBTOTAL	800 Acres
TOTAL	5280 Acres

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MX SITING INVESTIGATION
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MILFORD, UTAH, OBTS/DTA
LAND PARCEL DESCRIPTION

OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

CANNON AFB, PREFERRED SITE

Roosevelt County, New Mexico
T.3S.R.30E.
Section 24, SE 1/4
Section 25, S 1/2 and NE 1/4
Section 26, SE 1/4
Section 35, E 1/2
Section 36, All

SUBTOTAL 1760 Acres

T.4S.R.30E.
Section 1, N 1/2 and SE 1/3
Section 2, NE 1/4
Section 12, E 1/2

SUBTOTAL 960 Acres

T.4S.R.31E.
Section 19, SW 1/4
Section 30, W 1/2
Section 31, S 1/2 and NW 1/4
Section 32, SW 1/4

SUBTOTAL 1120 Acres

T.4S.R.31E.
Section 5, W 1/2
Section 6, All
Section 7, All
Section 8, NW 1/4

SUBTOTAL 1760 Acres

TOTAL 5600 Acres

CANNON AFB, ALTERNATIVE SITE

Roosevelt County, New Mexico
T.3S.R.33E.
Section 12, SE 1/4
Section 13, E 1/2
Section 23, E 1/2
Section 24, All
Section 25, All
Section 26, E 1/2
Section 36, N 1/2

SUBTOTAL 2720 Acres

T.3S.R.34E.
Section 7, SW 1/4
Section 17, W 1/2
Section 18, All
Section 19, All
Section 20, W 1/2
Section 30, W 1/2
Section 31, NW 1/4

SUBTOTAL 2560 Acres

TOTAL 5280 Acres

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